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STATE AGRICULTURAL COLLEGE,
MANHATTAN, KANSAS.

(98)

SEVENTH BIENNIAL REPORT

OF THE

REGENTS AND FACULTY.

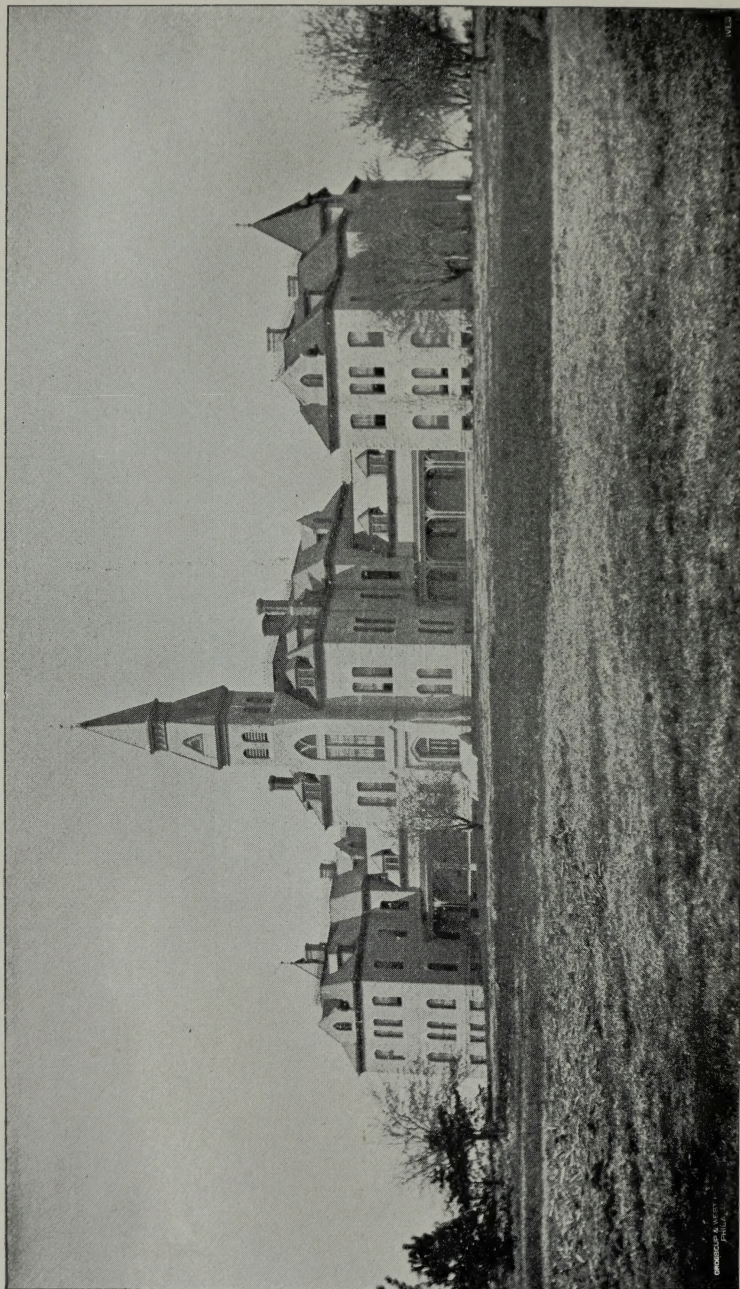
1889-90⁸.

WITH APPENDIX.

TOPEKA.

KANSAS PUBLISHING HOUSE: CLIFFORD C. BAKER, STATE PRINTER.
1890.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



KANSAS STATE AGRICULTURAL COLLEGE. (Main Building.)

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STATE AGRICULTURAL COLLEGE,

MANHATTAN, KANSAS.

UNIVERSITY OF ILLINOIS
LIBRARY

SEVENTH BIENNIAL REPORT

OF THE

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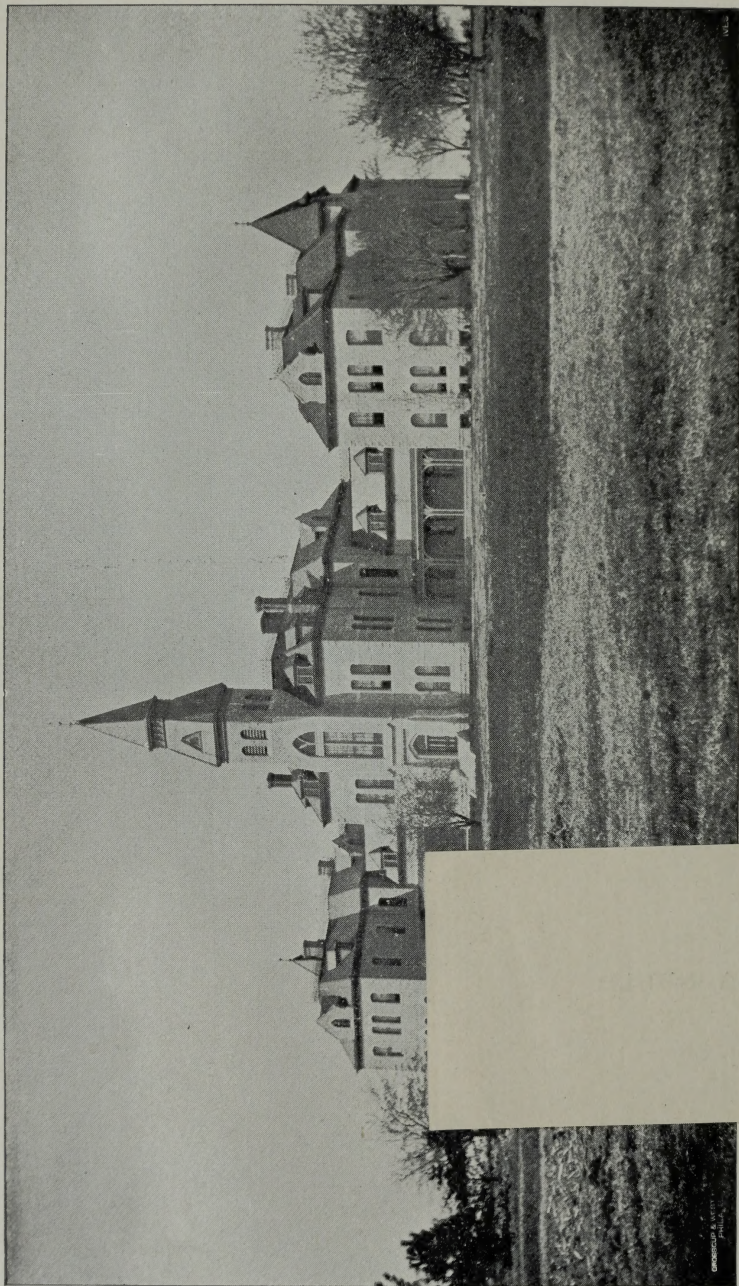
COMPLIMENTS OF

GEO. T. FAIRCHILD.

KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KANSAS.

TOPEKA.

KANSAS PUBLISHING HOUSE: CLIFFORD C. BAKER, STATE PRINTER.
1890.



STATE AGRICULTURAL COLLEGE. (Main Building.)

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1890.

BOARD OF REGENTS.

HON. JOSHUA WHEELER (1891),* PRESIDENT.....Nortonville, Jefferson Co.
HON. MORGAN CARAWAY (1892), VICE-PRESIDENT.....Great Bend, Barton Co.
HON. JNO. E. HESSIN (1892), TREASURER.....Manhattan, Riley Co.
HON. T. P. MOORE (1893), LOAN COMMISSIONER.....Holton, Jackson Co.
HON. A. P. FORSYTH (1891).....Liberty, Montgomery Co.
HON. R. W. FINLEY (1893).....Oberlin, Decatur Co.
PRES. GEO. T. FAIRCHILD, (*ex-officio*) SECRETARY.

I. D. GRAHAM, *Assistant Secretary*, Manhattan.

*Term expires.

KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KAS., Dec. 10, 1890.

To His Excellency Governor LYMAN U. HUMPHREY:

DEAR SIR—I transmit herewith, under the laws of the State, the seventh biennial report of the Board of Regents of the Kansas State Agricultural College, including the annual reports of the President, professors and other officers, for the years ending June 30, 1889, and June 30, 1890.

Respectfully yours,

GEO. T. FAIRCHILD,
Secretary Board of Regents.

KANSAS STATE AGRICULTURAL COLLEGE.

REGENTS' REPORT.

To His Excellency LYMAN U. HUMPHREY, *Governor of the State of Kansas:*

SIR: The Regents of the Kansas State Agricultural College respectfully submit this, their seventh biennial report, for the two years ending June 30, 1890, appending thereto annual reports as required by Congress, from each department as at present organized.

The two years past have shown the usual progress in the building-up of the institution, in organization, equipment, attendance, and general repute. The reports of the President and heads of departments present the particulars of this growth. Although the institution has been hindered somewhat by diminished income on account of lowered rates of interest on its endowment, and insufficient appropriations for buildings and apparatus, it is believed to have kept pace in other respects with the development of the State. The improvements provided for by the last Legislature have been carefully made, the appropriations having been expended as detailed in the report of the Secretary. The development of the Experiment Station under appropriations by act of Congress, has contributed not a little to the general advantage of the College in agricultural and horticultural matters. The work of the station is fully presented in separate annual reports provided by law, and already issued to the public with your sanction. It is needless to add that these reports have met with popular favor, and have attracted attention in other States.

The faculty of instruction and management remains essentially the same in strength as reported two years since, with but few changes in the personnel as reported by the President. The names, titles, and salaries of the employes of College and station are herewith stated in full, with the fund from which the salaries are paid.

<i>Professors and Instructors.</i>	<i>From station fund.</i>	<i>From income fund.</i>	<i>Totals.</i>
¹ George T. Fairchild, A. M., President, Professor of Logic and Political Economy, Secretary of Board, and Chairman of Station Council.....	\$500	\$2,500	\$3,000
George H. Failyer, M. Sc., Professor of Chemistry and Mineralogy, and Station Chemist.....	900	900	1,800
Edwin A. Popenoe, A. M., Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens, and Station Horticulturist, etc.	900	900	1,800
William A. Kellerman, Ph. D., Professor of Botany, and Station Botanist..	900	900	1,800
David E. Lantz, M. Sc., Professor of Mathematics.....		1,500	1,500

¹ With house.

<i>Professors and Instructors.</i>	<i>From station fund.</i>	<i>From income fund.</i>	<i>Totals.</i>
John D. Walters, M. Sc., Professor of Industrial Art and Designing.....		\$1,500	\$1,500
Ira D. Graham, B. Sc., Secretary, Instructor in Book-keeping, and Assistant Secretary of Board.....	\$400	1,400	1,800
Oscar E. Olin, Professor of English Language and Literature.....		1,500	1,500
Mrs. Nellie S. Kedzie, M. Sc., Professor of Household Economy and Hygiene.....		1,000	1,000
Mrs. Elida E. Winchip, Superintendent of Sewing.....		800	800
Ozni P. Hood, B. Sc., Professor of Mechanics and Engineering, and Superintendent of Workshops.....		1,400	1,400
² Alexander B. Brown, A. M., Professor of Music.....		500	500
John S. C. Thompson, Superintendent of Printing.....		1,000	1,000
Francis H. White, A. M., Professor of History and Constitutional Law.....		1,400	1,400
¹ Charles C. Georgeson, M. Sc., Professor of Agriculture, Superintendent of Farm, and Station Agriculturist.....	1,400	600	2,000
⁴ E. B. Bolton, Lieutenant 23d U. S. Infantry, and Professor of Military Science and Tactics.....			
Ernest R. Nichols, Instructor in Physics, Superintendent of Telegraphy.....		1,200	1,200
Nelson S. Mayo, M. Sc., D.V.S., Instructor in Physiology and Veterinary Science, Station Veterinarian.....	600	600	1,200
ASSISTANTS AND FOREMEN.			
J. T. Willard, M. Sc., Assistant in Chemistry.....	1,200		1,200
C. M. Breese, M. Sc., Assistant in Chemistry.....		800	800
Jennie C. Tunnell, B. Sc., Assistant Librarian.....		420	420
S. C. Mason, B. Sc., Assistant in Horticulture and Foreman of Gardens.....	800		800
F. A. Marlatt, B. Sc., Assistant in Entomology.....	600		600
W. T. Swingle, B. Sc., Assistant in Botany.....	600		600
H. M. Cottrell, M. Sc., Assistant in Agriculture.....	800		800
Wm. Shelton, Foreman of Farm.....	800		800
C. A. Gundaker, Foreman of Blacksmith Shop.....		600	600
W. L. House, Foreman of Carpenter Shop.....		720	720
³ A. C. McCreary, Janitor.....		600	600
Totals.....	\$10,400	\$21,540	\$31,940

¹ With house.² With fees from instrumental lessons.³ With house, fuel, and lights.⁴ Detailed by order of the War Department without extra pay, except by special arrangement for extra teaching outside the Military Department.

During the past year several post-graduate students have been employed as assistants in teaching, receiving compensation by the hour at rates varying from fifteen to twenty-five cents, according to the responsibility involved; and by special contract Lieut. J. F. Morrison, on detail as Professor of Military Science and Tactics, was given extra classes in mathematics and physics, at the very moderate compensation of fifty dollars a term for each class.

COURSE OF STUDY.—For many years past the four-years course, founded upon the preparation given in the common schools, has led to the degree of Bachelor of Science. The general character of this course as directly related to agriculture and the mechanic arts, with a fair discipline in the use of our mother tongue, has proved satisfactory to the majority of those especially interested in education for the industrial classes, and no changes have been made for the past two years. With various adjustments to the special wants of young men and young women, the single course answers for both, and so far as the studies are the same, both sexes are united in classes. The outline of the course, on the following page, is given for general knowledge; but fuller particulars may be found in the annual catalogue.

FIRST YEAR—FALL TERM.

Arithmetic.
English Analysis.
Geometrical Drawing.
Industrial.

WINTER TERM.

Book-keeping.
English Structure.
United States History.
Free-hand drawing three times a week.
Industrial.

SPRING TERM.

Algebra.
English Composition.
Botany.
Industrial (Carpentry or Sewing).

SECOND YEAR—FALL TERM.

Algebra completed.
Elementary Chemistry.
Horticulture.
Industrial.

WINTER TERM.

Geometry.
Agriculture or Household Economy.
Organic Chemistry and Mineralogy.
Twelve lessons in Military Science.
Industrial (Cooking).

SPRING TERM.

Geometry completed, Projection Drawing.
Entomology.
Analytical Chemistry.
Eighteen lectures in Military Science.
Industrial (Farm and Garden or Dairy).

THIRD YEAR—FALL TERM.

Trigonometry and Surveying.
Anatomy and Physiology.
General History.
Industrial (Farm and Garden).

WINTER TERM.

Mechanics.
Agricultural Chemistry.
Rhetoric.
Industrial.

SPRING TERM.

Civil Engineering or Hygiene.
Physics.
English Literature.
Perspective Drawing two hours a week.
Industrial.

FOURTH YEAR—FALL TERM.

Agriculture or Literature.
Physics and Meteorology.
Psychology.
Industrial.

WINTER TERM.

Logic, Deductive and Inductive.
Zoölogy and Veterinary Science.
Structural Botany.
Industrial.

SPRING TERM.

Geology.
United States Constitution.
Political Economy.
Industrial.

REQUIREMENTS FOR ADMISSION.—Up to this time candidates for admission have been examined in the common branches taught in district schools, with reference to a thorough review of arithmetic and English grammar in the first year of the course. This year it has seemed wise to provide for admitting without examination all applicants who present county certificates to teach, diplomas from county graded schools which have received the approval of the Faculty, and certificates to having passed the grammar grades in the city schools whose course of study has been accepted. It seems desirable that every encouragement should be given the common schools to provide complete preparation for admittance to the College. At present such preparation is not up to the standard desired, but a marked improvement has been felt in later years, and the expectation is that this new arrangement will stimulate the country schools to special efforts for such preparation.

POST-GRADUATE STUDY.—For several years past the College has had in attendance numbers of graduates pursuing special studies, and to give more definite form to such advanced study, the plan has been adopted of giving the second degree of Master of Science upon the plan on the following page.

1. Each candidate shall furnish evidence satisfactory to the Faculty of proficiency in at least one of each of the groups of arts and sciences here named:

<i>Arts:</i>	<i>Sciences:</i>
Agriculture.	Botany.
Horticulture.	Chemistry.
Engineering.	Zoölogy.
Architecture and Designing.	Entomology.
Domestic Economy.	Physics.

2. Each candidate must present for consideration by the Faculty a satisfactory thesis, involving original researches in line with one or the other of the courses pursued as above, and shall deposit a perfect copy in the College library.

3. Application to the Faculty for sanction of the lines of study and research selected should be made as early as the first day of November, and the subject of the thesis must be settled upon as soon as the first day of January preceding the Commencement at which the degree is expected.

4. Candidates must be from graduates of three or more years' standing, unless a post-graduate course of one year or more has been pursued at this College, in which case the second degree may be conferred two years after graduation.

Outlines of direction for study and research in various arts and sciences, with special adaptation to the wants and opportunities of individual applicants, will be furnished, at request, to all graduates; and Professors in charge will gladly aid by correspondence in any researches undertaken.

The degree of Master of Science may be conferred upon the graduates of other colleges of like grade with our own, provided the applicant shall first satisfy the Faculty of his proficiency in the industrial studies distinctive of this institution, on the following conditions:

1. The applicant for the Master's degree must be a graduate of at least three years' standing, and a resident of Kansas.

2. His post-graduate study shall have been in line with that required of graduates of this College, as published in our Catalogue.

3. He must make application for the degree on or before the first day of January preceding the granting of the same. The application must be accompanied with a statement of his course of study, the work upon which the claim for the degree is based, and the subject selected for his thesis.

4. By April 1st an abstract of the thesis must be submitted to the Faculty.

5. Before May 15th the applicant shall present himself for examination. The examination shall be thorough and extensive, and shall be conducted by a special committee of the Faculty.

That the plan is accomplishing its object is proved by the number of young men and women called from this College to responsible places in other institutions, and by the good work in those positions. Such students have helped to establish the good name of the College in other States and throughout the nation.

ENDOWMENT.—No change has been made in the amount of this fund during the two years past, except that the single piece of real estate, sold under contract for \$1,340, has been forfeited by failure to meet the terms of the contract as to principal, interest and taxes. The total fund, \$501,426.33, was on June 30th last represented by the securities described on the following page.

SECURITIES.

School bonds, ten per cent.....	\$1,935 00	
School bonds, seven per cent.....	49,381 80	
School bonds, six per cent.....	204,053 00	
School bonds, five per cent.....	1,200 00	\$256,569 80
Municipal bonds, ten per cent.....	\$3,700 00	
Municipal bonds, eight per cent.....	5,000 00	
Municipal bonds, seven per cent.....	3,200 00	
Municipal bonds, six per cent.....	212,300 00	224,200 00
Land contracts, ten per cent.....	\$13,046 27	
Real-estate contracts, eight per cent.....	1,500 00	14,546 27
Real estate, estimated value.....	\$1,340 00	
Cash awaiting investment.....	4,770 26	6,110 26
Total.....		\$501,426 33

The reports of the Loan Commissioner show that the fund has been wholly invested, and the accounts with the State Treasurer indicate promptness in the payment of interest. A few cases of delinquency show such slackness on the part of officials as may require the attention of the Attorney General.

THE INCOME FUND.—By the strictest economy, even by postponing provisions of urgent necessity, the expenses of the past two years have been kept within the limits of the income, so that the apparent balance against the College at the close of the fiscal year has been reduced from \$8,270.48 in 1888 to \$3,933.21 in 1890. This apparent deficit is accounted for by the fact that interest already due to the amount of about \$8,000 remains unpaid at the close of the year. In fact, the College has been only temporarily in debt, having had assured income sufficient to meet all expenses incurred. It has been necessary, however, to meet some of these expenses in advance of the semi-annual collection of interest by the State Treasurer, and the monthly accounts show the College in debt to its Treasurer, from lack of a working surplus sufficient to carry by the periods of slight payments of interest in spring and fall. Such a surplus it has been impossible to keep under the pressure of an increased number of students to care for, with need of better appliances, while the income from interest upon the endowment has been gradually shrinking during the past five years. The fact that all expenditures for the work of the Experiment Station had to go on for three months, in anticipation of a payment from the United States Treasury at the end of the quarter, has added to the necessity for borrowing, so that a small expense for interest has been absolutely required. The last-mentioned cause of the difficulty has been removed already by act of Congress providing for payment of the Station fund quarterly in advance; and a recent act of Congress, approved August 30th last, supplements the original act of July 2d, 1862, by an appropriation of \$15,000 for 1890, \$16,000 for 1891, and an annual increase of \$1,000 for each succeeding year until the annual amount shall reach \$25,000. Of this appropriation, two installments are now due, and will provide for all current expenses of the institution, and secure the needed working surplus above referred to. It must be borne in mind that this fund, like the income from the original endowment, is by terms of the act, “to be applied only to instruction in agriculture and the

mechanic arts, the English language and the various branches of mathematical, philosophical, and economic science, with special reference to their application in the industries of life, and to the facilities for such instruction"; and "no portion of said moneys shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings." This makes it absolutely necessary to ask the State for such buildings and permanent improvements as the natural growth of the College demands. Several wants presented two years ago, but at that time left unprovided for, are still more pressing now, while new ones have come with the growth of the College in attendance and importance to the State. These all concern buildings and permanent equipment, such as the State is pledged to furnish in accepting the substantial endowment and support provided by the national Government.

In repairs upon present buildings there is needed at once means first, to replace the old shingle roof of the north wing of the main building by slate and metal, to correspond with the other parts of the building; second, to put metal in place of shingles upon Mechanics Hall and Horticultural Hall, for preservation of the buildings and security against fire. The estimated cost of these roofs is \$2,050. Current repairs upon all the seven buildings, in the way of painting, pointing, steam and gas-fitting, glass and floors, cannot well be less than \$1,500 each year.

In the way of new buildings, we again emphasize the need of additional dwellings; one for the Professor of Horticulture, Superintendent of the extensive fruit plantations and grounds; and one for the farm foreman where the hired men may be boarded. Both of these are needed for economy of work and the safety of property. The estimated expense for the two is \$6,500.

Additional class-room is needed, and sufficient place for the library and reading-room has long been. So far the library has been stored in an ordinary class-room, and a small office has served for reading-room. These quarters have been outgrown for years, and books have been stacked so closely as to be inconvenient of access, while almost no room is left for those who consult them. The College has been made District Depository for Government publications, and receives on this account several hundred volumes annually, for which provision must be made for the sake of the people. Further, the library of the College is gaining repute for its distinctive merits in applied science, and needs room for growth in this age of wonderful advancement in invention. We ask that an appropriation of \$8,000 be made for a fire-proof building to serve as a present store-room for the library, and a nucleus for such additional structure as the needs may demand.

The Mechanics Hall is now crowded to its utmost capacity with a class of nearly 200 in the use of wood-working tools alone. The time has come when an enlargement of these shops is needed, both on account of the numbers in attendance and the nature of the work needed. Hitherto work in iron has been limited to the narrow range afforded by two forges in a small wooden

shop. This State is now making rapid strides in mechanical development, and ranks among the first in use of mechanical contrivances on the farm. It is time that this department of the College, provided for by national appropriations, be properly housed. The State cannot longer afford to postpone the erection of a suitable building for iron-work in connection with that already existing for wood-work. The lowest possible estimate for present needs in this particular is \$6,000, and true economy would be better secured with a present expenditure of \$10,000.

The State was asked two years ago to provide a system of water-supply connected with the city system to secure against fire the ten buildings at the College and to supply water for boilers, stock, greenhouses, and grounds. The appropriation of \$3,000, half the sum asked, was barely sufficient to provide a system of mains and hydrants, surrounding the main building and near several other buildings with connection by small pipes with most of the buildings for a partial supply of water within. No means was given for plumbing in the buildings, or for mains near the Museum and barns, both exposed to danger from fire, and the plans for a system of sewerage (now wholly wanting), with proper water closets for buildings occupied by students and teachers, all approved by the special committee visiting the College.

We now renew the request for these much-needed additions to comfort, health, and safety of the College, with sufficient increase to meet the necessary enlargement of the College. The sum needed is \$4,000. The need of new and larger quarters for swine-breeding was presented two years ago. That need is still more imperative now. The College has been the means of distributing over the State some of the best strains of pure-bred hogs at moderate prices, and needs good facilities for handling several breeds safely at the same time, both for illustrative purposes, and for experimental tests. No temporary structure is longer economical, and the amount asked for construction of a suitable building with stone walls and complete yards is \$950.

The sum of \$2,500 is asked for the increase of the library. The increased number of advanced students demands a corresponding increase in the facilities for their study. Moreover, the rapid advance made in the physical sciences requires a constant addition to the scientific knowledge available in books, and the student of to-day is not equipped for good work without access to the best books published. These cannot be omitted from the machinery of true education, and yet from their technical nature are more expensive than ordinary literature. Our library ought to be the fullest in the State in information upon the industrial arts by which our people thrive.

The appropriation for supply of fuel from the mines of the penitentiary, \$1,500 a year for freight and hauling, is needed again for the two years ending June 30th, 1893. We also ask that \$500 be appropriated for a full water-supply in each year. These sums will be used only as needed, and any surplus will be covered into the State treasury at the expiration of the year. It is expected that water will be taken by measure upon general terms offered

by the city of Manhattan, as soon as funds are provided for securing a meter.

The usual amount of \$300 a year is asked for the salary of Loan Commissioner, and the moderate sum of \$360.89 for incidental expenses in making loans and caring for funds during the past two years should be restored to the College funds by appropriation.

In conclusion, attention is called to the general repute of this institution as reaching more nearly than ordinary the wants of the industrial world in general education and training. The attendance from the homes of farmers, mechanics and business men is the largest found in any State Agricultural College, and its influence is more widely acknowledged than ever before. The line of work coincides almost exactly with the line marked out in the new act of Congress providing for instruction of the industrial classes. It is to be hoped that its future efficiency will be well provided for by the State Legislature.

Respectfully submitted.

JOSHUA WHEELER.
MORGAN CARAWAY.
JNO. E. HESSIN.
T. P. MOORE.
A. P. FORSYTH.
R. W. FINLEY.
GEO. T. FAIRCHILD.

STATE AGRICULTURAL COLLEGE,
December 1, 1890.

FINANCIAL REPORTS, 1889-90.

REPORTS OF LOAN COMMISSIONER.

To the Board of Regents—GENTLEMEN: I herewith submit my report of investments made for the endowment fund of the State Agricultural College, for the year ending June 30, 1889.

Invested in school-district bonds, 6 per cent.....	\$20,549 00
" " " " 5 per cent.....	400 00
" municipal bonds, 6 per cent.....	5,500 00
Total.....	<u>\$26,449 00</u>

Respectfully submitted.
Holton, Kas., June 30, 1889.

T. P. MOORE, *Loan Commissioner.*

To the Board of Regents—GENTLEMEN: I herewith hand you my report of investments made for the endowment fund of the State Agricultural College, for the year ending June 30, 1890.

Invested in school bonds, 6 per cent.....	\$5,650 00
“ county “ 6 per cent.....	31,700 00
Total.....	\$37,350 00

Respectfully submitted.
Manhattan, Kas., June 30, 1890.

JNO. E. HESSIN, *Loan Commissioner.*

TREASURER'S REPORTS.

To the Board of Regents — GENTLEMEN: Herewith find my report for the year ending June 30, 1889.

INTEREST ACCOUNT.

Received from State treasury.....	\$33,200 00
" " Executive Department.....	1,098 04
" " Farm.....	2,019 28
" " Horticultural " ".....	563 12
" " Chemical.....	170 15
" " Mechanical " ".....	1,979 80
" " Printing.....	340 93
" " Telegraph " ".....	188 14
" " Domestic.....	217 52
" " Sewing " ".....	2 00
" " Library.....	4 40
" " Refunding appropriation.....	175 00
" " Cattle-sale note.....	78 95
" " Marshall county, District No. 135.....	8 00
" " Refunded freight.....	9 00
" " R. B. Bryan.....	40 00
Total.....	\$40,094 33
Due Treasurer, July 1, 1888.....	\$10,208 91
Paid approved vouchers, July 1, 1888, to June 30, 1889.....	38,611 08
Due Treasurer, July 1, 1889.....	\$8,725 66
Unpaid notes receivable.....	482 50

APPROPRIATIONS, 1888-89.

<i>General Repairs.</i>	
Received from State Auditor	\$1,000 00
Paid approved vouchers	1,000 00
<i>Water Works.</i>	
Received from State Auditor	\$3,000 00
Paid approved vouchers	3,000 00
<i>Museum Cases.</i>	
Received from State Auditor	\$1,000 00
Paid approved vouchers	1,000 00
<i>Library.</i>	
Received from State Auditor	\$1,000 00
Paid approved vouchers	1,000 00
<i>Farm Experiments.</i>	
Received from State Auditor	\$500 00
Paid approved vouchers	500 00
<i>Mechanical Apparatus.</i>	
Received from State Auditor	\$500 00
Paid approved vouchers	500 00
<i>Physical Apparatus.</i>	
Received from State Auditor	\$500 00
Paid approved vouchers	500 00
<i>Salary, Loan Commissioner.</i>	
Received from State Auditor	\$300 00
Paid approved vouchers	300 00

Respectfully submitted.

JOHN E. HESSIN, *Treasurer.*

Manhattan, Kansas, June 30, 1889.

To the Board of Regents—GENTLEMEN: Herewith is submitted my report for the year ending June 30, 1890:

INTEREST ACCOUNT.

Received from State Treasury	\$34,510 00
Executive Department	64 67
Farm	2,049 07
Horticultural	1,235 61
Chemical	300 27
Mechanical	1,548 51
Printing	366 30
Telegraph	267 95
Domestic	248 75
Sewing	5 00
Botany	68 05
Drawing	52
Music	1 50
Manhattan city scrip	83 75
Stafford Co., District No. 27	54 00
Jackson Co., District No. 39	1 50
Total	\$40,805 45
Due Treasurer July 1, 1889	\$8,725 66
Paid approved vouchers July 1, 1889, to June 30, 1890	36,298 58
Due Treasurer July 1, 1890	\$3,968 79
Unpaid notes receivable	\$360 00

APPROPRIATIONS, 1889-90.

<i>Furniture.</i>	
Received from State Auditor.....	\$500 00
Paid approved vouchers.....	500 00
<i>Physical Apparatus.</i>	
Received from State Auditor.....	500 00
Paid approved vouchers.....	500 00
<i>General Repairs.</i>	
Received from State Auditor.....	1,000 00
Paid approved vouchers.....	1,000 00
<i>Steam Heating.</i>	
Received from State Auditor.....	200 00
Paid approved vouchers.....	200 00
<i>Farm.</i>	
Received from State Auditor.....	200 00
Paid approved vouchers.....	200 00
<i>Horticultural Barn.</i>	
Received from State Auditor.....	1,000 00
Paid approved vouchers.....	1,000 00
<i>Mechanical.</i>	
Received from State Auditor.....	200 00
Paid approved vouchers.....	200 00
<i>Printing.</i>	
Received from State Auditor.....	250 00
Paid approved vouchers.....	250 00
<i>Library.</i>	
Received from State Auditor.....	1,000 00
Paid approved vouchers.....	1,000 00
<i>Mathematics.</i>	
Received from State Auditor.....	500 00
Paid approved vouchers.....	500 00
<i>Coal.</i>	
Received from State Auditor.....	1,125 28
Paid approved vouchers.....	1,125 28
<i>Farm Superintendent's House.</i>	
Received from State Auditor.....	200 00
Paid approved vouchers.....	200 00
<i>Industrial Art.</i>	
Received from State Auditor.....	600 00
Paid approved vouchers.....	600 00
<i>Water Rates.</i>	
Received from State Auditor.....	300 00
Paid approved vouchers.....	300 00
<i>Salary Loan Commissioner.</i>	
Received from State Auditor.....	300 00
Paid approved vouchers.....	300 00
<i>Chemistry and Mineralogy.</i>	
Received from State Auditor.....	400 00
Paid approved vouchers.....	400 00
<i>Physiology and Veterinary.</i>	
Received from State Auditor.....	250 00
Paid approved vouchers.....	250 00

Respectfully submitted.
College, June 30, 1890.

JOHN E. HESSIN, *Treasurer.*

REPORT OF THE SECRETARY, 1889-90.

To the Board of Regents—GENTLEMEN: Herewith are presented, in concise tabular form, transcripts from the books of this office, showing the condition of the endowment fund at the close of each month, the sources of income each year, the

summary of the annual inventory, and the expenditures and receipts of each College department for the years ending June 30, 1889, and June 30, 1890. There are also added, as required by law, explicit statements of the items of expenditure, under special appropriations, for the same year.

Vouchers for all expenditures, in duplicate, and duplicate receipts for all cash received, are filed in order and are accessible at all times.

Full ledger accounts of the invested funds, showing the exact condition in each investment of every kind, are kept from data furnished, through triplicate receipts, by the State treasury, after original entry of each bond purchased, as to both principal and coupons. Accounts are also kept with the State Treasurer and the College Treasurer, the several departments of the College, special appropriations, and the distinct funds in charge of the Board of Regents. All papers are filed, readily accessible to anyone inquiring into the financial condition of the College.

It is scarcely necessary to remind you that the books have been, as in previous years, in the immediate charge of Mr. I. D. Graham, Assistant Secretary, to whose diligence and ability general perfection of accounts is due. All general accounts have been carefully audited, as you are aware, by the Board of Regents at the regular quarterly meetings, and the final summary has been carefully tested by comparison of the reports of other officers, herewith presented.

A separate account is kept with the Experiment Station in both the Secretary's and Treasurer's offices. A transcript of each is published in the annual report of the Station. This report is submitted to the Governor on the first day of February in each year.

Trusting that this report will be found in all respects correct and satisfactory, it is respectfully submitted for your consideration.

GEORGE T. FAIRCHILD, *Secretary.*

College, Manhattan, Kas., June 30, 1890.

SOURCES OF INCOME, 1888-89.

<i>State Treasury.</i>	
Interest on school bonds, 10 per cent	\$320 84
Interest on school bonds, 7 per cent	4,454 54
Interest on school bonds, 6 per cent	11,416 28
Interest on school bonds, 5 per cent	25 00
Interest on municipal bonds, 10 per cent	290 00
Interest on municipal bonds, 8 per cent	460 00
Interest on municipal bonds, 7 per cent	224 00
Interest on municipal bonds, 6 per cent	11,925 50
Interest on real-estate securities, 8 per cent	127 40
Interest on real-estate securities, 7 per cent	187 60
Interest on land contracts, 10 per cent	2,066 36
Interest on delinquent interest	188 32
Total	\$31,685 84
<i>College Departments.</i>	
Rent of buildings	\$98 43
Special fees from students	475 50
Sales of produce, stock, etc.	2,910 18
From appropriations for labor and supplies	2,174 54
From experiment station fund for labor and supplies	924 48
From cattle-sale notes	78 95
Refunded expenditures	9 25
Refunding appropriation	175 00
R. B. Bryan	40 00
Marshall county, District No. 35	8 00
Total	\$6,894 33
From State treasury	31,685 84
Grand total	\$38,581 17

SOURCES OF INCOME, 1889-90.

State Treasury.

Interest on school bonds, 10 per cent	\$554 90
Interest on school bonds, 7 per cent	4,592 37
Interest on school bonds, 6 per cent	13,790 45
Interest on school bonds, 5 per cent	80 00
Interest on municipal bonds, 10 per cent.....	370 00
Interest on municipal bonds, 8 per cent.....	400 00
Interest on municipal bonds, 7 per cent.....	224 00
Interest on municipal bonds, 6 per cent.....	12,231 00
Interest on real-estate securities, 8 per cent	120 00
Interest on land contracts, 10 per cent.....	1,517 63
Interest on delinquent interest	250 96
Total.....	\$34,131 31

College Departments.

Sales of stock, etc.....	\$2,726 24
Special fees from students.....	653 57
From appropriations for labor and supplies	1,490 60
From experiment station fund, labor and supplies.....	1,535 79
From Manhattan city scrip.....	83 75
From District No. 27, Stafford county.....	54 00
From District No. 39, Jackson county	1 50
Total.....	\$6,545 45
From State treasury.....	34,131 31
Grand total.....	\$40,676 76

ENDOWMENT FUND—MONTHLY BALANCES, 1888-89.

MONTHS.	SCHOOL BONDS.				MUNICIPAL BONDS.				LAND CONTRACTS.	REAL-ESTATE SECURITIES.		CASH.	ENDOWMENT.	
	5 per cent.	6 per cent.	7 per cent.	10 per cent.	10 per cent.	8 per cent.	7 per cent.	6 per cent.		8 per cent.	7 per cent.		Total.	Productive.
July	\$1,000	\$205,412 11	\$68,262 06	\$5,311	\$3,700	\$5,000	\$3,200	\$179,600	\$21,089 03	\$2,250	\$1,340	\$5,312 13	\$501,426 33	\$496,114 20
August.....	1,000	207,995 00	66,682 06	4,581	3,700	5,000	3,200	179,600	20,136 55	2,250	1,340	5,951 72	501,426 33	495,474 61
September.....	1,000	213,610 00	66,682 06	4,581	3,700	5,000	3,200	179,600	19,886 55	2,250	1,340	1,126 72	501,426 33	500,299 61
October.....	1,000	213,610 00	66,682 06	4,581	3,700	5,000	3,200	179,600	18,636 55	2,250	1,340	1,826 72	501,426 33	499,509 61
November.....	1,000	213,610 00	66,682 06	4,581	3,700	5,000	3,200	179,600	18,446 55	2,250	1,340	2,016 72	501,426 33	499,409 61
December.....	1,000	212,750 00	66,357 06	4,581	3,700	5,000	3,200	179,600	18,446 55	2,250	1,340	3,251 72	501,426 33	498,174 61
January.....	1,400	212,356 00	66,033 06	4,516	3,700	5,000	3,200	179,100	18,006 55	2,250	1,340	4,565 72	501,426 33	496,860 61
February.....	1,400	210,856 00	65,783 06	4,516	3,700	5,000	3,200	179,100	16,279 55	2,250	1,340	8,501 72	501,426 33	492,924 61
March.....	1,400	210,856 00	65,581 98	4,516	3,700	5,000	3,200	179,100	15,879 55	2,250	1,340	8,602 80	501,426 33	492,823 53
April.....	1,400	210,856 00	65,581 98	4,516	3,700	5,000	3,200	179,100	15,175 75	2,250	1,340	9,306 60	501,426 33	492,119 73
May.....	1,400	215,590 00	65,375 32	4,516	3,700	5,000	3,200	182,100	15,175 75	1,500	1,340	2,529 26	501,426 33	498,897 07
June.....	1,400	214,090 00	63,505 32	4,361	3,700	5,000	3,200	182,100	15,175 75	1,500	1,340	6,054 26	501,426 33	495,372 07

MONTHLY BALANCES OF ENDOWMENT FUND, 1889-90.

July.....	\$1,400	\$209,845 00	\$59,762 12	\$3,778	\$3,700	\$5,000	\$3,200	\$181,600	\$15,175 75	\$1,500	\$1,340	\$15,125 46	\$501,426 33	\$486,300 87
August.....	1,400	208,595 00	57,376 22	3,298	3,700	5,000	3,200	181,600	15,085 75	1,500	1,340	19,331 36	501,426 33	482,094 97
September.....	1,400	210,195 00	57,376 22	3,298	3,700	5,000	3,200	181,600	14,023 27	1,500	1,340	18,793 84	501,426 33	482,632 49
October.....	1,400	212,045 00	56,701 22	3,128	3,700	5,000	3,200	181,600	14,023 27	1,500	1,340	17,788 84	501,426 33	483,637 49
November.....	1,400	212,045 00	56,701 22	3,128	3,700	5,000	3,200	181,600	13,653 27	1,500	1,340	18,158 84	501,426 33	483,267 49
December.....	1,400	213,035 00	56,476 22	3,128	3,700	5,000	3,200	181,600	13,653 27	1,500	1,340	17,333 84	501,426 33	484,032 49
January.....	1,400	211,305 00	55,744 05	3,128	3,700	5,000	3,200	195,600	13,653 27	1,500	1,340	8,856 01	501,426 33	484,570 52
February.....	1,400	210,378 00	54,691 80	2,843	3,700	5,000	3,200	195,600	13,196 27	1,500	1,340	7,977 26	501,426 33	484,570 52
March.....	1,400	210,428 00	54,691 80	2,843	3,700	5,000	3,200	195,600	13,196 27	1,500	1,340	8,527 26	501,426 33	493,449 07
April.....	1,400	210,428 00	54,691 80	2,843	3,700	5,000	3,200	204,275	13,196 27	1,500	1,340	2 26	501,426 33	501,424 07
May.....	1,400	208,903 00	54,366 80	2,443	3,700	5,000	3,200	206,000	13,046 27	1,500	*	527 26	500,086 33	499,559 07
June.....	1,200	204,053 00	49,381 80	1,935	3,700	5,000	3,200	212,300	13,046 47	1,500	.....	4,770 26	500,086 33	495,316 07

* Represented by 160 acres of land for sale.

SPECIAL APPROPRIATIONS.

ITEMIZED STATEMENT OF EXPENDITURES, 1888-89.

General Repairs.

Executive Department, labor and materials.....	\$791 36
A. D. Woodruff, painting.....	30 65
A. J. Rudy, labor.....	2 95
Adam Steinbach, plastering.....	82 90
Mechanical Department, carpentry.....	92 14
Total.....	\$1,000 00

Water Works.

John E. Hessin, Treasurer, freight.....	\$357 82
J. W. Neir, plans.....	30 00
Ripley & Bronson, pipe, hose, and hydrants.....	1,738 93
R. T. McCammon, hauling.....	27 20
I. D. Graham, freight.....	2 70
D. B. Allman, laying pipe.....	402 24
Richards & Conover, tools.....	1 30
Mechanical Department, laying pipe.....	170 65
Horticultural Department, labor.....	15 00
Executive Department, pipe.....	103 86
Crane Bros. Manufacturing Co., pipe.....	150 30
Total.....	\$8,000 00

Farm Experiments.

Farm Department, labor.....	\$40 88
Manhattan B. L. & C. Co., lumber.....	74 91
S. M. Ferguson, blacksmithing.....	7 40
D. M. Ferry & Co., seeds.....	75
M. W. Johnson Seed Co., seeds.....	1 70
William Rennie, seeds.....	1 00
H. Sibley & Co., seeds.....	50
F. Barteldes, seeds.....	30
J. C. Suffern, seeds.....	4 90
P. H. Bork, seeds.....	1 00
P. L. Hargett & Co., seeds.....	50
John E. Hessin, freight.....	69 05
I. D. Graham, freight.....	13 58
D. F. Barclay, seeds.....	4 50
B. W. Payne & Son., engine repairs.....	11 00
United States Wind Engine and Pump Co., pump.....	20 20
E. B. Purcell Mercantile Co., hardware.....	75
Mechanical Department, labor.....	2 20
George Burgoyne, photographs.....	12 00
Electrotint Engraving Co., engraving.....	75 00
W. L. Layson, lumber.....	80 63
E. M. Shelton, sundries.....	5 85
J. Q. A. Sheldon, P. M., postage on reports.....	59 15
St. Louis Paper Co., envelopes for reports.....	12 25
Total.....	\$500 00

Mechanical.

R. L. Cofran, castings.....	\$16 30
J. A. Fay & Co., machinery.....	275 87
Cordesman, Meyer & Co., machinery.....	99 25
Mechanical Department, labor.....	19 13
Rose Polytechnic shops, machinery.....	4 65
Crane Bros. Manufacturing Co., tools.....	8 97
Chas. H. Besley & Co., tools.....	1 83
Total.....	\$500 00

Library.

Moulton, Wenborne & Co., books.....	\$2 00
D. E. Lantz, books.....	6 80
Houghton, Mifflin & Co., books.....	2 50
Subscription News Co., periodicals.....	170 05
G. H. Failyer, books.....	31 00
S. A. Maxwell & Co., books.....	54 67
Jordan Bros., books.....	3 00
William F. Clay, books.....	46 09
John Wheldon, books.....	49 22
U. P. James, books.....	22 93
James McDonough, books.....	13 95
Canadian Entomologist, periodicals.....	80
Leonard Scott Publishing Co., periodicals.....	4 00
S. M. Fox, books.....	438 86
W. A. Kellerman, books.....	20 96
E. A. Popenoe, books.....	10 51
American Entomological Society, books.....	18 00
American Shorthorn Breeders' Association, books.....	2 25

SPECIAL APPROPRIATIONS—CONTINUED.

ITEMIZED STATEMENT OF EXPENDITURES, 1888-9—*Concluded.*

<i>Library—Concluded.</i>	
R. C. Auld, books.....	\$2 00
Forum Publishing Co., periodicals.....	11 00
American Meteorological Journal, periodicals.....	2 00
C. S. Plumb, periodicals.....	4 00
Inland Printer Co., periodicals.....	2 00
E. M. Shelton, book.....	1 00
George T. Fairchild, books sent C. O. D.....	22 76
John E. Coulter, periodical.....	2 00
John Gilmore, periodicals.....	4 50
W. J. Beal, book.....	2 50
H. Darnell, book.....	7 40
C. A. Buell, book.....	4 00
Clark W. Bryant Co., book.....	6 90
Lee, Welch & Co., book.....	1 06
Dulan & Co., book.....	5 88
A. S. Clark, book.....	7 91
H. W. Williams, book.....	14 50
Table Talk Publishing Co., book.....	1 00
Total.....	\$1,000 00
<i>Museum Cases.</i>	
Mechanical Department, labor and materials.....	\$865 32
S. I. Munson, lumber.....	10 80
I. D. Graham, freight.....	8 83
Kansas City Show-Case Works, cases.....	115 05
Total.....	\$1,000 00
<i>Physical Apparatus.</i>	
J. M. Queen & Co., apparatus.....	\$290 67
William Marvin, finishing cases.....	20 00
I. D. Graham, freight.....	3 17
Midland Electric Co., apparatus.....	53 66
Lodge, Davis & Co., apparatus.....	132 50
Total.....	\$500 00
<i>Salary Loan Commissioner.</i>	
T. P. Moore, salary.....	\$300 00

ITEMIZED STATEMENT OF EXPENDITURES, 1889-90.

<i>General Repairs.</i>	
Isaiah Williston, cut stone and flagging.....	\$18 50
J. W. Stout & Co., materials.....	4 50
C. A. Brockett Cement Co., materials.....	2 70
E. B. Purcell Mercantile Co., hardware.....	1 88
R. D. Whaley, painting.....	35 50
David Hood, labor.....	1 00
A. J. Whitford, tinning.....	31 90
I. D. Graham, freight.....	5 24
C. G. Howard, moving building.....	6 00
E. R. Burtis, labor.....	1 25
L. Rasmussen, flagging.....	157 01
Campbell & Cutler Co., glass.....	4 91
H. M. Cutler, blackboards.....	17 50
George T. Fairchild, glass.....	4 85
Mechanical Department, labor and materials.....	552 45
Kellam Book and Stationery Co., paper hanging.....	81 81
Vulcan Manufacturing Co., paints.....	54 00
A. Harrold & Co., castings.....	19 00
Total.....	\$1,000 00
<i>Farm Fencing and Tools.</i>	
E. B. Purcell Mercantile Co. hardware.....	\$25 05
Mechanical Department, labor.....	15 05
Manhattan B. L. & C. Co., lumber.....	24 27
Farm Department, labor.....	40 35
Sandwich Manufacturing Co., tools.....	43 95
I. D. Graham, freight.....	3 58
Keystone Implement Co., tools.....	29 65
John Deere Plow Co., plow.....	11 10
B. F. Koppenhaver, pump.....	7 00
Total.....	\$200 00

SPECIAL APPROPRIATIONS—CONTINUED.

ITEMIZED STATEMENT OF EXPENDITURES, 1889-90—Continued.

<i>Library.</i>	
S. M. Fox, books.....	\$414 66
Houghton, Mifflin & Co., books.....	3 00
John Wheldon, books.....	69 00
J. H. Sanders Publishing Co., books.....	2 00
H. Williams, books.....	50 27
E. A. Popenoe, books.....	3 50
American Shorthorn Breeders' Association, books.....	2 75
Geo. T. Fairchild, books sent C. O. D.....	38 50
W. A. Kellerman, books.....	28 44
John Gilmore, books.....	3 25
Subscription News Co., magazines.....	35 30
Phil. M. Springer, books.....	10 00
Popular Gardening Publishing Co., magazine.....	1 00
Wm. F. Clay, books.....	19 11
J. C. Mangan, magazine.....	1 00
I. D. Graham, freight.....	35 85
C. A. Waldo, books.....	117 80
Botanical Gazette, magazines.....	2 00
Western Subscription Agency, magazines.....	11 60
D. E. Lantz, books.....	7 23
Z. F. Riley & Co., books.....	1 00
Delia W. Lyman, books.....	133 00
W. T. Swingle, books.....	9 74
Total.....	\$1,000 00
<i>Furniture.</i>	
Stevenson & Peckham, carpets.....	\$436 05
Ballard & Murdock, chairs.....	63 95
Total.....	\$500 00
<i>Salary Loan Commissioner.</i>	
John E. Hessin.....	\$300 00
<i>Water Rates.</i>	
City of Manhattan, Kansas.....	\$300 00
<i>Veterinary.</i>	
Museum Department, manikin.....	\$250 00
<i>Chemical.</i>	
Ward & Howell, minerals.....	\$400 00
<i>Mathematics.</i>	
W. & L. E. Gurley, apparatus.....	\$492 35
I. D. Graham, freight.....	7 65
Total.....	\$500 00
<i>Drawing.</i>	
I. D. Graham, freight.....	\$38 58
Executive Department, postage.....	50
A. H. Abbott, models.....	8 00
Library Bureau, label-holders.....	14 00
Burlington School Furniture Co., desks.....	190 40
F. C. Burtis, labor on desks.....	3 31
A. E. Martin, labor on desks.....	2 00
S. M. Fox, tools.....	1 25
Mechanical Department, chests of drawers.....	163 88
Swingle & Varney, models.....	28 38
Kansas Publishing House, portfolio.....	2 50
C. Hennecke Co., models.....	110 40
Prang Educational Co., models.....	36 80
Total.....	\$600 00
<i>Printing.</i>	
E. B. Purcell Mercantile Co., type.....	\$6 30
Central Type Foundry, type.....	229 12
Kansas Newspaper Union, type.....	3 38
I. D. Graham, freight.....	3 92
State Journal Co., type.....	7 28
Total.....	\$250 00
<i>Mechanical Tools and Apparatus.</i>	
C. H. Besley & Co., machines.....	\$79 19
Western Foundry and Machine Works, tools.....	3 90
E. B. Purcell Mercantile Co., tools.....	11 25
I. D. Graham, freight.....	15 79

SPECIAL APPROPRIATIONS—CONCLUDED.

ITEMIZED STATEMENT OF EXPENDITURES—*Concluded.*

<i>Mechanical Tools and Apparatus—Concluded.</i>		
Pratt, Whitney & Co., tools.....	\$12 29	
Crane Bros. Manufacturing Company, tools.....	6 99	
O. P. Hood	1 15	
H. P. Hood, model.....	5 00	
Chas. Strelinger & Co., tools.....	43 23	
Lodge, Davis & Co., tools.....	21 39	
Total.....	\$200 00	
<i>Steam Heat.</i>		
Crane Bros. Manufacturing Company, materials.....	\$109 01	
Mechanical Department, labor.....	90 99	
Total.....	\$200 00	
<i>Physics—Apparatus.</i>		
I. D. Graham, freight.....	\$15 30	
Nebraska Electric Company, apparatus.....	43 40	
James W. Queen & Co., apparatus.....	55 96	
E. B. Purcell Mercantile Company, apparatus.....	75	
Webb's Adder Company, adder.....	7 00	
Slafer & Budenberg, apparatus.....	91 00	
Elmer & Amend, apparatus.....	268 80	
Swingle & Varney, apparatus.....	3 39	
Chemical Department, apparatus.....	9 25	
E. E. Winchip, screen.....	5 24	
Total.....	\$500 00	
<i>Horticultural Barn.</i>		
S. M. Fox, drafting paper.....	\$1 25	
Industrial Art Department, paper.....	52	
C. A. Sponberg, stonework.....	510 25	
M. B. L. & C. Co., lumber.....	169 00	
C. W. Courtwright, roofing.....	101 50	
J. W. Embrey, tinning.....	6 25	
I. D. Graham, freight.....	52	
Mechanical Department, labor.....	208 01	
Charles Irvin, iron-work.....	2 70	
Total.....	\$1,000 00	
<i>Farm House.</i>		
A. J. Whitford, hardware.....	\$7 50	
J. W. Embrey, tinning.....	15 25	
Mechanical Department, labor.....	109 60	
E. M. Shelton, bath-tub.....	8 75	
C. N. Pratt, painting.....	8 40	
Boynton & Van Winkle, flooring.....	40 50	
E. T. Lockwood, labor.....	10 00	
Total.....	\$200 00	
<i>Coal.</i>		
David Hood, hauling.....	\$199 28	
Jno. E. Hessin, Treasurer, freight.....	926 00	
Total.....	\$1,125 28	

DELINQUENT DISTRICTS.

<i>Counties.</i>	<i>Dis- trict.</i>	<i>Coupons.</i>	<i>Bonds.</i>
Barton.....	54		\$1,850 00
Barton.....	59	\$13 00	
Chautauqua.....	95	34 12	
Chautauqua.....	158	12 00	6 00
Cherokee.....	61	33 00	350 00
Cherokee.....	83		71 91
Greenwood.....	86		100 00
Jewell.....	103	16 50	
Kingman, White township.....		90 00	
Morris.....	50	140 00	

DELINQUENT DISTRICTS—CONCLUDED.

<i>Counties.</i>	<i>Dis- trict.</i>	<i>Coupons.</i>	<i>Bonds.</i>
Morris.....	58		\$250 00
Morris.....	73	\$75 00	
Morris.....	79	24 00	
Riley.....	2		200 00
Riley.....	5	6 00	100 00
Riley.....	16	14 40	
Riley.....	55		100 00
Riley.....	39	28 80	
Riley.....	59		100 00
Riley.....	66	24 00	
Riley.....	69		100 00
Riley.....	70	24 00	
Riley.....	72	12 00	
Riley.....	73	15 00	
Sumner.....	72	60 00	44
Stafford.....	1	3 36	
Smith.....	64		125 00
Smith.....	92		60 00
Scranton City (Osage county).....	City	75 00	
Phillips.....	10		300 00
Phillips.....	93		350 00
Totals.....		\$700 18	\$4,063 35

SUMMARY OF GENERAL COLLEGE INVENTORY, JUNE 30, 1889.

Executive Department.

Buildings and grounds.....	\$158,275 00	
In College building.....	1,232 96	
President's office.....	813 95	
Secretary's office.....	651 80	
Chapel stage.....	165 00	
Reception room.....	300 00	
Armory Hall.....	23 40	
Mechanics' Hall.....	132 08	
Horticultural Hall.....	92 92	
Chemical Laboratory.....	67 51	
Slate.....	175 00	
Vault.....	26 75	
		\$161,956 37

Farm Department.

Buildings.....	\$10,700 00	
Work-horses.....	225 00	
Cattle—Shorthorns.....	5,210 00	
Aberdeen-Angus.....	1,500 00	
Herefords.....	550 00	
Jerseys.....	1,275 00	
Swine—Berkshire.....	495 00	
Poland-China.....	155 00	
	2,365 00	
Machinery, steam.....	637 75	
Miscellaneous tools.....	100 00	
Miscellaneous articles.....	381 00	
Office furniture.....	701 00	
Crops on ground.....	1,770 00	
Fences and wells.....		26,064 75

Horticultural Department.

Plantations.....	\$2,215 00	
Greenhouse and stock.....	4,211 28	
Tools, lawn and greenhouse.....	149 60	
Horses, and horse tools.....	453 75	
Hand and garden tools.....	344 50	
Workshop tools.....	26 30	
Museum cases and collections.....	1,742 00	
Office furniture, etc.....	366 80	
	441 85	
Miscellaneous tools and supplies.....		9,951 08

SUMMARY OF GENERAL COLLEGE INVENTORY, 1888-9—CONTINUED.

<i>Chemical Department.</i>		
Chemicals	\$256 90	
Chemical apparatus	2,913 05	
Mineral collection and duplicates	1,085 00	
Platinum ware, wire, etc.	111 50	
Cases for minerals and apparatus	1,017 00	
Photo apparatus	34 00	
Analytical tables with water, gas and steam	1,282 55	
Office furniture and supplies	167 40	\$6,867 40
<i>Mechanical Department.</i>		
Tools and machines, wood shops	\$5,391 07	
Tools and machines, iron shops	458 30	
Engineering apparatus	81 50	
Cash on hand	48 08	
Accounts due department	25 96	
Bills against special appropriations	62 45	
Bills against Experiment Station	3 00	
	\$6,070 36	
Less bills payable due other departments	69 72	6,000 64
<i>Printing Department.</i>		
Presses, paper-cutter and office fixtures	\$1,754 48	
Type, furniture and stock	1,649 68	
Accounts due department	45 98	3,450 14
<i>Telegraph Department.</i>		
Lines, batteries, tools, etc	\$889 70	
Supplies	29 16	918 86
<i>Domestic Department.</i>		
Kitchen furniture	\$384 90	
Dairy apparatus	203 55	588 45
<i>Library Department.</i>		
Books and pamphlets	\$14,307 99	
Card catalogue and supplies	1,912 88	
Furniture, etc	538 73	
Type-writer, frames, binders, etc	167 76	16,927 36
<i>Industrial Department.</i>		
Tables, models and apparatus	\$839 27	839 27
<i>Physical Department.</i>		
General physical apparatus	\$430 65	
Sound apparatus	99 83	
Heat apparatus	98 33	
Light apparatus	207 85	
Electrical apparatus	1,050 85	
Meteorological apparatus	122 90	
Cases for apparatus	558 60	
Shelving for apparatus	6 75	
Lecture table and fixtures	31 65	
Note of I. McFerguson	10 00	
	\$2,617 43	
Less bills payable mechanical department	38 85	2,578 58
<i>Sewing Department.</i>		
Machines	\$210 00	
Cases and apparatus	345 45	555 45
<i>Military Department.</i>		
Cases, tools, etc.	\$890 10	
Uniforms	681 55	771 65
<i>Musical Department.</i>		
Instruments	\$1,134 87	
Furniture, etc	33 15	1,168 02
<i>English Department.</i>		
Cyclostyle	\$15 90	15 90
<i>History and Constitutional Law Department.</i>		
Maps, charts, etc	\$26 50	26 50
<i>Mathematical Department.</i>		
Surveying apparatus	\$546 50	
Mathematical apparatus	45 25	591 75

SUMMARY OF GENERAL COLLEGE INVENTORY, 1888-9—CONCLUDED.

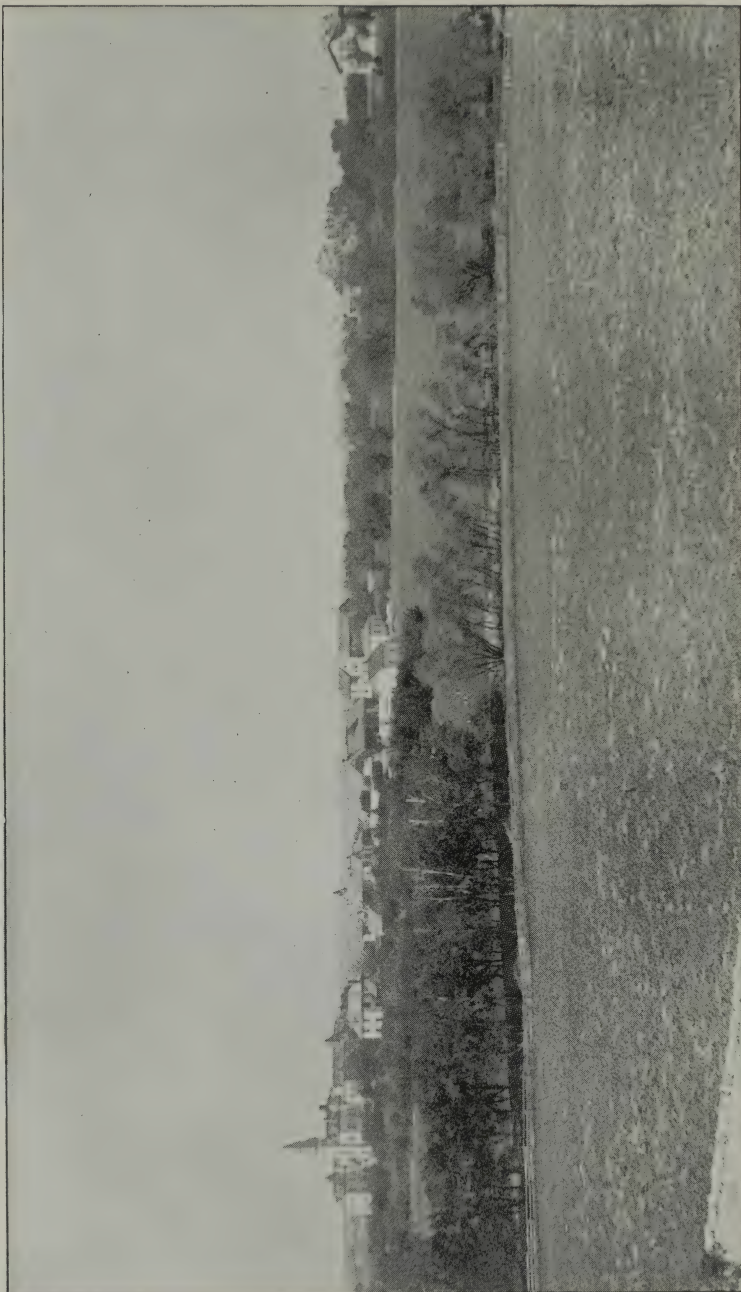
<i>Physiology and Veterinary Department.</i>		
General museum.....	\$2,808 60	
Scientific club donations.....	121 00	
Cases.....	2,179 98	
Models, tools, etc.....	131 75	
		\$5,241 33
<i>Treasury Department.</i>		
Cattle-sale note.....	\$135 00	
Order, School District No. 27, Stafford county.....	40 00	
Chattel mortgage.....	225 00	
Manhattan city scrip.....	82 50	
Office furniture and supplies.....	66 80	
		549 30
<i>Botanical Department.</i>		
Microscopes and accessories.....	\$869 50	
Cases and shelving.....	350 40	
Furniture.....	84 00	
General herbarium and duplicates.....	517 00	
Kansas herbarium.....	352 00	
Supplies and apparatus.....	172 65	
Geological column.....	110 00	
		2,455 55
Grand total.....		\$247,518 35

SUMMARY OF GENERAL COLLEGE INVENTORY, JUNE 30, 1890.

<i>Executive Department.</i>		
Farm, grounds, dwellings, and water-works.....	\$49,425 00	
College Hall.....	77,100 00	
Armory.....	10,950 00	
Mechanics' Hall.....	7,000 00	
Horticultural Hall.....	4,200 00	
Chemical Laboratory.....	9,600 00	
In College Hall.....	1,714 22	
Armory.....	23 40	
Mechanics' Hall.....	120 08	
Horticultural Hall.....	80 50	
Chemical Laboratory.....	59 01	
President's office.....	1,007 50	
Vault.....	26 75	
Secretary's office.....	680 05	
Chapel stage.....	165 00	
Reception room.....	300 00	
Roofing slate on hand.....	175 00	
Real estate unsold.....	1,340 00	
		\$163,966 51
<i>Chemical Department.</i>		
Analytical tables, with water, gas, and steam.....	\$1,282 55	
Chemicals.....	254 30	
Chemical apparatus.....	2,920 35	
Platinum ware, wire, etc.....	117 50	
Mineral collection.....	1,525 25	
Cases for minerals and apparatus.....	1,083 30	
Office furniture and supplies.....	159 65	
		7,342 90
<i>Horticultural Department.</i>		
Plantations.....	\$2,210 00	
Greenhouse and stock.....	4,211 00	
Greenhouse and lawn tools and supplies.....	144 75	
Horses and horse tools.....	496 25	
Hand garden tools and fixtures.....	351 00	
Work-shop tools.....	38 65	
Office furniture and apparatus.....	2,163 88	
Supplies on hand.....	468 75	
Stone barn.....	1,000 00	
		11,084 28
<i>Botanical Department.</i>		
Microscopes and accessories.....	\$893 35	
Furniture and cases.....	508 95	
Supplies.....	40 25	
General herbarium.....	452 00	
Kansas herbarium.....	426 80	
Herbarium duplicates.....	65 00	
Geological column.....	110 00	
Tools and apparatus.....	15 00	
		2,511 35
<i>Mathematical Department.</i>		
Surveying apparatus.....	\$1,047 65	
Mathematical apparatus.....	45 25	
		1,092 90

SUMMARY OF GENERAL COLLEGE INVENTORY, 1889-90—CONCLUDED.

<i>Industrial Art Department.</i>		
Furniture, models, and apparatus.....		\$1,406 41
<i>Telegraph Department.</i>		
Lines, batteries, tools, etc.....	\$777 01	
Supplies.....	35 09	
<i>English Department.</i>		812 10
Cyclostyle.....		15 90
<i>Domestic Department.</i>		
Kitchen furniture.....	\$398 50	
Dairy apparatus.....	194 75	
<i>Sewing Department.</i>		593 25
Machines.....	\$240 00	
Cases and apparatus.....	375 05	
<i>Mechanical Department.</i>		615 05
Tools and machines, wood shops.....	\$5,753 21	
Tools and machines, iron shops.....	464 51	
Accounts receivable.....	124 38	
<i>Musical Department.</i>		6,342 10
Instruments.....	\$1,155 72	
Furniture, etc.....	63 15	
<i>Printing Department.</i>		1,218 87
Presses and paper cutter.....	\$1,457 00	
Type, cases, stands, and stock.....	2,261 79	
Office furniture.....	138 35	
Accounts receivable.....	19 50	
<i>History and Constitutional Law.</i>		3,876 64
Maps, charts, etc.....		62 39
<i>Farm Department.</i>		
Buildings.....	\$10,700 00	
Work-horses.....	125 00	
Cattle—Shorthorns.....	4,980 00	
Aberdeen-Angus.....	1,600 00	
Jerseys.....	1,250 00	
Herefords.....	550 00	
Holsteins.....	700 00	
Swine—Berkshires.....	475 00	
Poland-China.....	355 00	
Machinery and tools.....	2,599 25	
Office fixtures.....	223 00	
Miscellaneous farm tools.....	518 95	
Wells, fences, etc.....	1,675 50	
Crops in ground.....	858 00	
Crops in barn.....	105 00	
<i>Military Department.</i>		26,714 70
Cases, tools, etc.....	\$33 20	
Uniforms.....	856 22	
<i>Physics Department.</i>		889 42
General physical apparatus.....	\$441 05	
Sound apparatus.....	83 60	
Heat apparatus.....	129 88	
Meteorological apparatus.....	171 85	
Light apparatus.....	438 09	
Electrical apparatus.....	1,111 90	
Cases, tables, etc.....	597 00	
<i>Museum and Veterinary.</i>		2,973 37
Zoological collection.....	\$2,057 75	
Scientific Club donations.....	121 00	
Geological collection.....	1,131 00	
Models and specimens in anatomy.....	455 95	
Cases and apparatus.....	1,811 28	
<i>Library Department.</i>		5,576 98
Books, pamphlets, etc.....	\$16,068 14	
Furniture.....	548 73	
Card catalogue.....	1,942 81	
Binders, cases, etc.....	154 95	
<i>Treasury Department.</i>		18,714 63
Cattle-sale note.....	\$135 00	
Chattel mortgage.....	225 00	
Office furniture and supplies.....	80 20	
		440 20
Grand total.....		\$256,249 95



KANSAS STATE AGRICULTURAL COLLEGE. (General View.)

ANNUAL REPORTS

OF

COLLEGE DEPARTMENTS.

1888-89.

REPORTS.

PRESIDENT'S REPORT, 1888-89.

To the Board of Regents—GENTLEMEN: I present you herewith report of matters under my charge in the Executive Department for the year ending June 30, 1889, referring to the reports of Professors and Superintendents for all details of College affairs not under my personal supervision.

The Faculty of the College has remained the same as at the close of the previous year, with the exception that Mr. Francis H. White, of Brooklyn, N. Y., has filled the new chair as Instructor in history and constitutional law. His duties have included the charge of rhetorical exercises for the Second- and Third-year classes, to the advantage of the classes, by giving them continuous and thoroughly interesting work. He has also to some extent relieved Professor Olin by assistance in minor English classes. Lieut. Morrison has been employed, with your consent, to assist in the teaching of mathematical classes, upon terms already made known to you. The organization of the Faculty for general executive duties connected with the regular Monday Faculty meeting was as follows:

Public Exercises—Professors Shelton, Olin, Brown, Morrison, and White.

Farmers' Institutes—Professors Failyer, Shelton, Popenoe, Walters, and Kedzie.

Post-Graduate Courses—Professors Popenoe, Shelton, Failyer, Kellerman, and Walters.

Museums—Professors Kellerman, Failyer, Popenoe, Burleigh, and Graham.

Library—Professors Lantz, Shelton, Failyer, Olin, and White.

Examinations and Grades—Professors Graham, Lantz, Olin, Rogers, and White.

Social and Literary Entertainment—Mrs. Kedzie, Mrs. Winchip, Professors Brown, Morrison, and White.

Catalogue, Blanks, etc.—Professors Olin, Thompson, Graham, Walters, and Morrison.

Buildings—Professors Hood, Failyer, Popenoe, Kellerman, and Walters.

Otherwise the division of duties has remained essentially the same as reported last year, and the work has gone on with the usual satisfaction.

In the Experiment Station force, Mr. C. L. Marlatt, assistant in Entomology, resigned January 1st, to accept the place of Assistant in the Entomological

Division of the Department of Agriculture at Washington, and his brother, F. A. Marlatt, succeeded to the place here.

The general welfare of the College in all matters of discipline and order have been secured by essential unanimity on the part of the Faculty, and, with but few exceptions, there has been no occasion for Faculty action. A few cases of private reprimand, directed by the Faculty, cover all matters of discipline upon record. The general rule requiring students who fail in more than one study to withdraw from College, or drop back one year in the course, has served to give general efficiency to the work of the students.

The attendance for the year, on account of the severe drouth over the western part of the State, has been somewhat less than for two years previous. The total is shown in the following summary by sexes and by classes:

<i>Classes.</i>	<i>Gentle- men.</i>	<i>Ladies.</i>	<i>Total.</i>
Post-graduates	6	1	7
Fourth-year	19	9	28
Third-year	30	11	41
Second-year	56	47	103
First-year	156	110	266
Total	267	178	445

From 55 counties of Kansas, 419; from 12 other States, 26; applicants not enrolled, 36.

The average age of enrolled students is nearly nineteen and one-half years.

This diminution, as will be seen by comparison with previous reports, is almost wholly in the lower classes in the course, and will be more than made up in another year's growth, if the State is favored with fair crops. As fully three-fourths of the students are from farmers' homes, any failure in farming is at once felt in the attendance.

The daily routine of class work has remained unchanged from that reported last year, and the course of study has had no changes except what may be implied in courses of lectures enlarged from year to year by the heads of departments.

The weekly exercises of Friday afternoon have been maintained as usual, alternating a lecture from some member of the Faculty, or his substitute, and the rhetorical exercises of Fourth-year and Third-year classes.

The lectures of the year have been as follows:

Supt. Graham, "Men who get Side-tracked"	Sept. 21, 1888.
Prof. Kellerman, "Special Senses"	Oct. 5, 1888.
Mrs. Kedzie, "Then and Now"	Oct. 19, 1888.
Pres. Fairchild, "A Day and a Night in San Francisco"	Nov. 22, 1888.
Prof. Olin, "Individuality"	Nov. 16, 1888.
Prof. Brown, "Variation in Pitch Compared with Variation in Color" ..	Nov. 29, 1888.
Supt. Thompson, "The Modern Newspaper"	Dec. 14, 1888.
Lieut. Morrison, "Evolutions of Missile Weapons of Warfare"	Jan. 18, 1889.
Prof. Rogers, "Labor and Capital; Individual and Syndicate"	Feb. 1, 1889.

Dr. Burleigh, "The Relation of Higher Physical Culture to Greater Mental Attainment"	Feb. 15, 1889.
Prof. White, "Philanthropy"	Mch. 1, 1889.
Mr. John MacDonald, "Work of Robert Burns"	Mch. 15, 1889.
Prof. Shelton, "Rise of the Farmer"	Mch. 29, 1889.
Col. T. S. Case, "The Home of the Montezumas"	April 12, 1889.
Prof. Walters, "From Basle to Antwerp"	April 26, 1889.
Prof. Hood, "Inventors and their Work"	May 10, 1889.
Prof. Lantz, "The History of Mathematics"	May 24, 1889.
Regent Hessin, "The Loves of the Lawyers"	June 7, 1889.

In addition to these regular lectures, there were provided for the general entertainment two evening lectures, one on June 7th, 1889, before the Alpha Beta Society, by Chancellor Everest, of Garfield University, Wichita, entitled "That Woman"; and another on June 8th, before the Webster Society, by Hon. F. P. Dawes, entitled "The American Politician."

The annual exhibitions of three literary societies in one evening of each term, and the College social with a brief literary programme three times during the year, furnished other means of general entertainment. The College literary societies have been prosperous. The Y. M. C. A. and the Y. W. C. A. have kept up regular weekly meetings, and the College prayer meeting has been held on such Friday evenings as were not occupied by other exercises. The Scientific Club, composed of Professors and students, has held regular monthly meetings for the discussion of topics incidental to various courses of study in science.

The general health of the students and Faculty has been excellent. No deaths have occurred, nor has any serious illness affected the attendance. A few students were prevented from returning after the winter vacation, and a few others went home soon after their return, on account of a few cases of small-pox in the city, the exaggerated rumors of which had frightened their parents at a distance. It is proper to remark in this connection that there have been during the past ten years but three deaths among students. One was from drowning; one from measles; and one from typho-malarial fever brought on by over-exertion prior to entering college. It is believed that no similar record can be found of almost universal health among so large a body of students.

The year closed with the graduation of twenty-five students upon whom was conferred, upon recommendation of the Faculty, and by your order, the degree of Bachelor of Science. All presented orations on Commencement Day, having been trained for the occasion by Prof. Olin, before a large audience in the chapel. The following list presents their names and residences:

Emma A. Allen	Manhattan, Riley.
Joseph W. Bayles	Manhattan, Riley.
Walter R. Browning	Hamlin, Brown.
David E. Bunday	Barclay, Osage.
Samuel S. Cobb	Wagoner, <i>Indian Territory</i> .
Judson H. Criswell	Manhattan, Riley.

Mattie I. Farley.....	Melvern, Osage.
Clarence E. Freeman.....	North Topeka, Shawnee.
Hattie L. Gale.....	Manhattan, Riley.
John S. Hazen.....	Granada, Nemaha.
Albert B. Kimball.....	Manhattan, Riley.
William Knabb.....	Robinson, Brown.
Mary C. Lee.....	Manhattan, Riley.
Alonzo A. Mills.....	Hoytsville, Utah.
Susan W. Nichols.....	Manhattan, Riley.
Walter H. Olin.....	Potwin, Butler.
Eli M. Paddleford.....	Stockdale, Riley.
Maude F. Sayers.....	Ottawa, Franklin.
Stanley Snyder.....	Oskaloosa, Jefferson.
Florine Secrest.....	Randolph, Riley.
Charles W. Thompson.....	Edwardsville, Wyandotte.
Jane C. Tunnell.....	Manhattan, Riley.
Ina M. Turner.....	Topeka, Shawnee.
Robert U. Waldraven.....	Parallel, Washington.
Henry S. Willard.....	Wabaunsee, Wabaunsee.

The Faculty having recommended Claude M. Breese, of the class of 1887, as worthy the degree of Master of Science for proficiency in chemistry and agriculture, that degree was conferred upon him in accordance with your order.

The general exercises of Commencement week, followed the usual routine. The baccalaureate sermon was given on Sunday by myself, in accordance with the established custom of many years. The Third-year exhibition was on Monday evening. Eight members of the Third-year class presented orations, prepared under the direction of their rhetorical teacher, Professor White. The annual address was delivered on Tuesday evening, by Hon. N. C. McFarland, who took for his subject "The Realm of Doubt."

In work outside the College routine the Faculty has been represented by various members. The most notable work of this kind is the farmers' institutes, in ten of which we had representatives. These have been held as follows:

McPherson, November 15-16.	Barnes, January 31, February 1.
Sterling, December 13-14.	El Dorado, February 7-8.
Wabaunsee, January 10-11.	Hays City, February 14.
Vinland, January 17-18.	Wellington, February 15-16.
Peabody, January 24-25.	Junction City, March 16.

The State Board of Agriculture, the State Horticultural Society, the State Dairymen's Association, the Academy of Science, and the State Teachers' Association all have officers from among the members of the Faculty, and all have received assistance by addresses and papers.

The National Farmers' Congress and a meeting of the National Grange together at Topeka, suggested a special excursion for the attendants upon

those great gatherings, and with the assistance of Hon. William Sims, of Topeka, such an excursion was planned. The Union Pacific Railway furnished a special train free of charge. The people of Manhattan and the members of Manhattan Grange furnished dinner, and teams for transportation of 200 guests from the city to the College, and after several hours' visit through buildings and grounds, the company returned to Topeka with abundant expression of surprise and gratification at the equipment of the College.

Besides the multitude of visitors from all parts of the United States, in the excursion as mentioned above, the College has received very considerable notice from visitors connected with similar institutions in other States, directed here by the general repute of the institution. Among those may be mentioned Prof. W. O. Atwater, of the Experiment Station Office in the Department of Agriculture; President L. B. Arnold and Prof. A. Grimm, of the Oregon Agricultural College; President J. K. Patterson, of the Kentucky Agricultural and Mechanical College; Mr. E. M. Atkinson, Trustee of the Pacific University; and Dr. Martin Vilckins, of Vienna, Austria.

The College, through the Experiment Station, made a very creditable exhibition at the State Fair in Topeka, showing, in addition to sample animals from the College herd, varieties of potatoes, beans, peas, tomatoes, sorghum, and corn as grown for comparison in the Station.

By special request an exhibit of the general character of work done in the course of instruction here was prepared for the Department of Agriculture and one for the Bureau of Education; both of which were included in the exhibits of those departments at the Paris Exposition of 1889. One of them has been made a part of a permanent exhibition of educational methods, at Paris.

The *Industrialist* has been managed as heretofore, in the interests of the College, being sent in exchange to all newspapers of the State, and to all State officers, to members of the Legislature and to county officers interested in educational matters; also to parents and friends of students, each student being allowed to name one. It has also been sent to all agricultural colleges and experiment stations in exchange for their publications. These, with the regular subscription lists, make a weekly issue of about 2,000 copies. The editorial work has been done as heretofore, by members of the Faculty in routine under the general management of the President. The press of the State have recognized abundantly the general neatness of the paper and its official character.

PERSONAL DUTIES.—There has been no change in the work of my Professorship, which involves the teaching of the Fourth-year class one hour a day throughout the year. The fall term is occupied by daily recitations in Hopkins's "Outline Study of Man," followed by a four-weeks course of lectures in moral science, including the characteristics of government in its various forms and applications, and personal rights and duties. Each student prepared a thesis upon some topic assigned in connection with the general

study. The winter term, of twelve weeks only, is taken up by a careful study of Jevons's Elements of Logic. The spring term, of ten weeks, gives room for a brief outline of the subject of Political Economy in its relation to social welfare, given in a course of lectures with a printed synopsis. The class of 1889 numbered twenty-five, but my classes have averaged twenty-seven.

The general correspondence has been as usual in my charge, and the accounts of the College, including investments, in connection with the Loan Commissioner, have required constant supervision. Secretary Graham has given the best of attention to the books of the office, and they may be found in satisfactory shape and condition. The principal duties of the office, of course, have been the general requirements in adjustment of duties and attention to wants of the increasing number of students, with the general oversight in all the departments of the College, including the new work of the Experiment Station. In all these duties the Faculty has shared, with the utmost of consideration and carefulness.

Of work in behalf of the College through the State and elsewhere, I have borne about the usual amount. By your generous provision I was enabled to represent the College at the meeting of the National Educational Association in San Francisco, at which I presented two papers, both of which had important reference to the work of the College. One was entitled, "Agricultural Schools; Their Objects, Methods and Equipments," in which the aims of this College in the lines of Agriculture were made prominent. This received the hearty approbation of the National Council. The other paper, upon "Some Limitations in Industrial Training," was given as the annual address before the department of Industrial Education, of which I was President. The journey to California afforded me opportunity for recreation and vacation, for which I am very thankful.

My duties in connection with the State Board of Education have involved, as usual, frequent attendance upon meetings of the Board at Topeka, and general work in providing examination questions, both State and county, with special responsibility for a portion of the State examination in August. In the last duty I have had the assistance of several members of the Faculty.

My part in the farmers' institutes was confined to the attendance of three, in which, besides representing the interests of the College in educational matters, I presented an address entitled "Speculation on the Farm."

It fell to my lot to represent the College at the joint meeting of the National Grange and the Farmers' Congress, and I also gave an address before the annual meeting of the State Board of Agriculture upon the relations of the College to the Experiment Station and to the farmers of the State.

Multitudes of invitations to address teachers' institutes, county fairs, and farmers' picnics, have been declined because of interference with the essential work of the College.

It seems proper in closing this report to refer to legislative appropriations. A detailed account of each is given elsewhere. The wants of the College

seem scarcely to have received the attention they deserved. Although failure to appropriate as requested by the Board has not materially crippled the work of the College, the equipment and growth have not been fully provided for. The hurried inspection of the College by a sub-committee gave little time for actual study of College wants, and a later visit from a special committee came too late to influence legislation. These facts may account for some serious omissions, although on the whole a very fair growth has been made through the State appropriations. I append herewith a full statement of expenditures and receipts in the Executive department, so classified as to show the direction of chief expenditures, and the source of income.

EXPENDITURES AND RECEIPTS.

<i>Expenditures.</i>		
Offices of President and Secretary :		
Postage.....	\$272 27	
Stationery.....	42 53	
Furniture.....	76 27	
Labor, clerical, and mail-carrying.....	245 25	
Care of buildings, heating, etc.:		\$636 32
Janitors' wages, two men.....	\$883 50	
Students' wages.....	476 79	
Fuel.....	2,550 65	
Lights.....	140 92	
Tools and sundries.....	29 62	
Buildings:		4,081 48
Repairs.....	\$377 79	
Improvements (cash, \$791.36).....	1,242 48	
Grounds:		1,620 27
Care about buildings.....	\$5 85	
Improvements, seeding.....	31 67	
Offices and general class-rooms:		37 52
Furniture.....	\$248 21	
Incidentals.....	316 28	
Sundries:		564 49
Advertising.....	\$112 45	
Advertising, <i>Industrialist</i>	94 80	
Farmers' Institutes.....	158 55	
Commencement.....	29 25	
Expenses, Board meeting.....	43 00	
Expenses, State Board of Education.....	3 70	
Expenses, National Educational Association.....	146 30	
Expenses, State Fair.....	140 89	
Water pipes.....	86 52	
Paris Exposition.....	25 80	
Water works.....		841 26
		3,000 00
Total.....		\$10,780 34
<i>Receipts.</i>		
Cash:		
On vouchers.....	\$905 07	
On rent.....	90 43	
On coal.....	88 14	
On barrels.....	11 25	
On sundries.....	3 15	
		\$1,098 04
Department bills.....		120 00
Total.....		\$1,218 04
Increase of inventory.....		2,752 68
Actual expense.....		6,809 62

In concluding this my tenth annual report of work in this College, I can hardly refrain from congratulating the Board upon the substantial growth and accepted repute of the institution, and must express my grateful

acknowledgment to all who have shared with me in the responsibility of promoting this growth.

Respectfully submitted.

GEO. T. FAIRCHILD, *President*.

COLLEGE, June 30, 1889.

FARM DEPARTMENT, 1888-89.

[NOTE.—The report of Prof. E. M. Shelton, Professor of Agriculture and Superintendent of the Farm for sixteen years, was duly prepared and filed with the Secretary; but just before leaving for Queensland, Australia, where he was appointed Governmental Instructor in Agriculture, January 1, 1890, he asked for the report to make some notes upon it. Since that time the report has not been seen, and it is supposed to have gone with the Professor to Australia. It was missed too late to secure another copy, three months being required for return of mail from Queensland.]

CHEMICAL DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMEN: Below will be found summaries of my work for the year closing June 30, 1889. The details of the work in teaching are the same, essentially, as in previous years, and it does not seem necessary to repeat them here. For the work of the Chemical Department in the Experiment Station, I refer you to the Bulletins and the Annual Reports of the Station for the year. The south room of the Chemical Laboratory is set apart for the chemical work of the Station. But the latter furnishes its own apparatus and supplies except in the matter of water and gas, pipes and fittings.

The fall class in Inorganic Chemistry numbered ninety-one, in two divisions. The same class was given "chemical practice" in the chemical work-rooms, in two divisions; making three classes daily.

In the winter term I had two classes, aggregating sixty-eight, in Organic Chemistry. Lectures were given these for six weeks, when they had a six-weeks course in mineralogy, including one hour per day on blow-pipe determination of minerals, making two more classes.

I also taught the Third-year class in Agricultural Chemistry.

In the spring term, the Second-year class, numbering fifty-six, gave two hours per day to chemical analysis. In this are studied the reactions by which are determined the elements composing the various commercial compounds, brines, waters, rocks, fertilizers, etc.

Various kinds of analytical work have been done for citizens of the State, such as ores, clays, minerals, brines, and waters, potable and mineral.

Mr. C. M. Breese, assistant in the department, has given constant attention to the work in the department, and has in some cases had direct care of class work.

Respectfully submitted.

G. H. FAILYER, *Professor of Chemistry.*

COLLEGE, June 30, 1889.

DEPARTMENT OF HORTICULTURE AND ENTOMOLOGY, 1888-89.

To the Board of Regents—GENTLEMEN: I beg leave to submit the following report for the year ending June 30th, 1889,

My duties as instructor have remained as given in previous reports. The total number of assignments to my classes is, for the year, two hundred twenty-eight, the classes being those in horticulture, entomology, horticultural practice, and with ten students, including one post-graduate, in special horticulture or entomology.

The care of the grounds, as would be expected, requires yearly more attention with the development of the permanent growth, for the maintenance of the lawns, the plantations, and the roadways. The tree-growth in many of the belts and groups is now in such a degree of advancement as to call for special training, thinning, and extension, work of a character demanding close supervision. Necessary additions have been made to the plantations as demanded by and looking toward the completion of the plans accepted by you in 1885. In the aggregate there are included in these additions about one thousand trees, of which over four hundred are evergreens. There were also distributed to appropriate positions a considerable number of shrubs of different varieties. The material for all these additions was drawn from our nursery rows, where the plants had been growing, in the greater part, for two or more years. The transplanting of the evergreens was begun at an earlier date than customary, in the hope that the dormant condition of the trees would insure their successful removal. An unlooked-for drouthy fortnight following the planting was the cause of an unusual loss, especially affecting the red cedar and the Scotch pine. This loss, however, is immaterial so far as the effect in the plantation is concerned. The principal extensions of this year will be found north of the main entrance, along the east wall, and in four large groups along the south wall and southwest belts. The varieties most numerously represented in these additions are the Scotch pine, the Austrian pine, the white pine, the red cedar, the white spruce, the European alder, the wild black cherry, the white ash, and the green ash.

In the orchards and fruit plantations no changes of note have been made,

other than the addition to the experimental vineyard of two vines each of thirty-one varieties not heretofore included. These and the vines set last year have made a very thrifty growth, and this vineyard is now in prime condition. You are already aware of the condition of the apple orchards on the lower College farm, and I urge your consideration of the desirability of replanting this orchard in part at once.

The work in garden and nursery has all been upon lines laid down as part of the work in this department in the Experiment Station. Of the experiments mentioned as in progress at the time of submitting my last report, I may refer to the successful close of the whole, excepting the comparative study of garden beans, which was brought to an early conclusion by the flooding of the land in which the plants were growing. For the full account of the work done in these lines, with the data and results, you are referred to the report of this department in the "First Annual Report of the Experiment Station." The studies of the present season are in part in continuance and verification of those of last; but others in the same line are added, the lists being largely increased, and comprising many garden novelties.

During the winter was conducted a comprehensive experiment in the propagation of woody plants by cuttings. The number of sorts placed on trial was about one hundred, each sort being represented by cuttings made after several different methods. The total number of cuttings was about ten thousand, including those of different varieties of the grape, of which a considerable number was made. The plants of the most desirable sorts that were grown in this experiment have been set in rows east of the propagating houses, excepting the grapes, which are still in pots in the east house. The grapevines alone are worth at the market price more than the cost of the entire trial.

In testing the efficacy of protection in securing from winter injury the fruit buds of the peach tree, a number of budded trees in first bearing, prepared in the fall by root-pruning, and by cutting out the superabundant branches, were laid upon the ground and their tops covered with prairie hay, the prunings being thrown on to hold the covering in place. Before the bursting of the buds the spring following, the trees were lifted again to an erect position and secured by stakes, their buds as a rule showing greater advancement than those on trees of the same varieties not covered. From the appearance of bloom on the latter, it was at first thought that the mild winter had operated against the trial, but at the period of full bloom it was found that at least twice as many blooms appeared upon the trees that had been covered, as compared with an equal number of trees of the same variety left exposed. Upon the setting of the fruit the advantage of the protection became still more marked in the much greater number of fruits found upon the covered trees. As the mildness of the winter weather, and the necessarily severe root-pruning to which the trees were subjected, may be regarded as unusual conditions

it seems to me best to test the conclusions of this trial by a repetition with the same trees the coming winter, before publishing them in detail.

The discussion of other experimental work in progress at this time is scarcely necessary, as it will appear in full in forthcoming publications of the Experiment Station.

The resignation of my assistant in entomology, Mr. C. L. Marlatt, to take a similar position in the entomological division of the United States Department of Agriculture, was accepted January 1st; and the vacancy was filled by the appointment of Mr. F. A. Marlatt, a graduate of this College of the class of 1887. With this exception the working force of the department has remained unchanged.

My connection with the general college work has been of the usual character and extent—in the editorial work on the *Industrialist*, in the committees of the Faculty, and in assistance at farmers' institutes.

Following is the financial statement for the year:

<i>Expenditures.</i>		
Cash paid out on vouchers.....	\$2,773 58	
Department transfers.....	60 79	
		\$2,834 37
This total is approximately distributed as follows:		
Grounds.....	\$1,130 57	
Orchards and gardens.....	868 90	
Greenhouse.....	356 26	
Tools and repairs.....	124 09	
Museum and instruction.....	172 00	
Office assistance and supplies.....	71 25	
Team.....	111 30	
<i>Receipts.</i>		
Cash paid to Treasurer.....	\$563 12	
Department transfers.....	85 25	
Increase in inventory.....	292 28	
		940 65
Balance, expense of maintaining the Department, care of grounds, and permanent improvements not inventoried.....		\$1,893 72

Respectfully submitted.

E. A. POPENOE,

COLLEGE, June 30, 1889.

Professor of Horticulture and Entomology.

BOTANICAL DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMEN: Having been relieved of the classes in physiology, zoölogy, and geology, which were transferred to the new department of physiology and veterinary science, my class work has been confined wholly to botany.

A small class, numbering thirty-three students, irregular in their course of study, was given instruction in elementary botany during the fall term.

In the winter term the students of the senior class, twenty-five in number, pursued the study of structural botany. Each student was furnished with a compound microscope, a tray of tools, a set of reagents, and thus equipped

worked two hours daily in the laboratory under constant supervision and direction.

In the spring term ninety-four students received instruction in elementary botany. They were divided into three sections, and each recited one hour daily.

During the fall and winter terms one student took his industrial in this department, and in the spring term one student studied special botany.

The usual work in the way of delivering lectures and writing should be added to the above.

The botanical collections have been increased slightly by specimens from the vicinity of Manhattan, and a few others sent by various parties. The increase of the Kansas Herbarium has been 438 specimens—making the total 1,760 mounted specimens.

The work of collecting lithological material for a column to be placed in the museum to illustrate the successive geological formations of the State, begun when this department had charge of the class in geology, was this year completed.

The work of the Experiment Station has occupied very much of my time. With the help of a very efficient assistant, work of investigation and experimentation has been carried on in several lines, the most important being that of sorghum blight, of hackberry knot, and of cross-fertilization of Indian corn. The results have been published in the First Annual Report of the Kansas Experiment Station for the year 1888.

The experimental work undertaken in the beginning of the season of 1889 is a study of fungicides for smut of oats, and cross-fertilization of corn.

The expenses of the Department for the year have been as follows:

Class supplies.....	\$4 05
Apparatus.....	8 35
Student labor.....	15 94
Collecting specimens for geological column.....	37 95
Freight, expressage and drayage.....	15 63
Bills of departments, { The Chemical.....	22 90
{ Printing.....	22 45
Total.....	\$127 27

Respectfully submitted. W. A. KELLERMAN, *Professor of Botany.*

COLLEGE, June 30, 1889.

THE LIBRARY, 1888-89.

To the Board of Regents—GENTLEMEN: I take pleasure in submitting to you my report as Librarian for the year ending June 30th, 1889.

The State appropriation of \$1,000 was all expended early in the year. Its division among the several departments of the College left but little oppor-

tunity for growth in each. An annual appropriation of \$5,000 would not be too great to supply the needs of the library.

The total number of books drawn for home use was 6,777, but, as the library is open for about nine hours daily, and the students have free access to all the books and periodicals during this time, no record of their use in the library can be kept. I estimate that this use of books is about double as great as is the home use. With proper facilities provided for the convenience and comfort of the students in a well-lighted reading-room, this use of books in the library would rapidly increase and produce far greater interest in the contents of the library.

The character of the books drawn for home use during the year may be seen from the following statement:

Bound magazines.....	599	Psychology.....	93
History.....	751	Political science.....	296
Biography.....	253	Agriculture.....	145
Travels.....	149	Horticulture.....	75
Fiction.....	1,277	Botany.....	46
Poetry.....	280	Zoölogy.....	116
English literature and language.....	380	Chemistry.....	51
Essays.....	435	Physics.....	67
Religious.....	115	Mechanics.....	82
Education.....	90	Physiology.....	174
Art.....	72	Geology.....	60
Reading and elocution.....	407	Military science.....	63
Juveniles.....	185	Household economy.....	67
Unclassified.....	45	Mathematics.....	65
		General science.....	239
Total, history and literature.....	5,138	Total, science.....	1,639
		Grand total.....	6,777

The inventory just completed shows the following books in possession of the library:

8,857 bound volumes, valued at.....	\$14,149 99
349 duplicate volumes, valued at.....	88 00
2,500 pamphlets, valued at.....	70 00
Total.....	\$14,307 99

This is an increase in the value of books of \$2,135.95, due to the following sources:

Value of books bought during the year.....	\$817 74
Value of periodicals bound during the year.....	419 85
Value of donations received.....	899 30
Total.....	\$2,135 95

The increase in the number of bound volumes was, by purchase, 345 volumes; by binding, 203 volumes; by donations, 816 volumes; by exchange, 17 volumes. Loss, one volume. Total net increase, 1,389 volumes.

The most important of the donations received consists of the series of leather-bound public documents deposited in the library by the Secretary of the Interior. By act of Congress such a depository was established in each Con-

gressional district, and the particular library to receive the books was designated by the member of Congress for that district. Hon. John A. Anderson named our library as the depository for the Fifth Congressional District. On this account we have already received 665 volumes from the Department of the Interior. Owing to the lack of room in the library, a temporary store-room is being prepared for them on the second floor of the main building.

All that has been said in former reports about lack of room in the library is being emphasized in our daily experience. There has been much shifting of books from shelf to shelf, making some confusion in the classification. A new case to provide space for more books on Agriculture was built during the year.

The financial statement which follows will show the expenditures for the year, and their relations to the inventory of June 30, 1889:

Inventory, June 30, 1888:			
Books and pamphlets	\$12,172	04	
Furniture	530	91	
Catalogue	1,532	88	
Other items	286	51	
			\$14,522 34
Losses:			
Furniture (revolving table)	\$24	68	
Books	1	00	
			25 68
Balance			\$14,496 66
Increase for the year:			
Value of books bought	\$817	74	
Value of pamphlets and magazines bound	419	85	
Value of books donated	899	36	
Catalogue (labor)	250	00	
Permanent supplies	11	25	
Furniture	32	50	
			2,430 70
Inventory, June 30, 1889			\$16,927 36
Cash expenditures:			
State appropriation—For books	\$813	15	
For magazines	186	85	
Current funds—For books	15	67	
For periodicals	11	75	
For pay-roll, catalogue	250	00	
For pay-roll, labor, and attendance	485	84	
For freight and express	26	32	
For supplies	9	53	
			1,799 11
Department bills:			
Executive, drayage	\$5	25	
Executive, postage	4	75	
Printing	13	80	
Mechanical, furniture	21	50	
Mechanical, repairs	2	12	
			47 42
Total expenditures			\$1,846 53
Credits:			
Cash paid to treasurer	\$4	40	
Department bills	235	75	
Inventory increase	2,405	02	
			2,545 17
Balance			\$798 64

Respectfully submitted.

D. E. LANTZ, *Librarian.*

DONATIONS TO THE LIBRARY, 1888-89.

The following are the principal donations received during the past year:

From Hon. John A. Anderson, Member of Congress, Washington, D. C.: 10th Census Reports, Vol. 12, pt. II and plates, Vol. 17, Vol. 19, Vol. 21, Vol. 22, pts. I and II. Vol. 23, pts. I and II. Congressional Record, 48th and 49th Congress, 24 vols. Official Records, War of the Rebellion, Vol. 22, pts. I and II, Vol. 23, pts. I and II. Coast Survey, 1886. Report of the Commissioner of Navigation, 1887. Report of the Commissioner of Labor, 1887. Commercial Relations, 1887. Report of the Comptroller of the Treasury, 1888, pts. I and II. Report of the Interstate Commerce Commission, 1888.

From the Secretary of the Interior, through Hon. J. A. Anderson: 665 volumes Government documents in leather binding.

From Hon. T. F. Bayard, Secretary of State, Washington, D. C.: 21 volumes publications of the State Department.

From the United States War Department, Washington, D. C.: Report of Chief of Engineers, 1888, 4 vols. Ordnance Report, 1888.

From Hon. Norman J. Colman, Department of Agriculture, Washington, D. C.: Report of Department of Agriculture, 1887, 1888. Report on Hog Cholera. Bulletins of the Various Divisions, as Published. Insect Life, Vol. I, Nos. 1 to 11.

From the Secretary of the Smithsonian Institution, Washington, D. C.: Annual Report for 1885, pt. II. Miscellaneous Collections, Vols. 31, 32, and 33.

From the U. S. Civil Service Commission, Washington, D. C.: 1st and 4th Annual Reports.

From the U. S. Fish Commission, Washington, D. C.: Annual Reports, 1883, 1884, 1885. Bulletins, Vols. I to VI.

From Dr. J. C. Ayer's Sons: Ayer's Almanac, 1889, bound.

From the Author, E. B. Baldwin: The Eastern Continent, Vol. I, in numbers.

From A. S. Barnes & Co., Chicago, Ill.: Lights of Two Centuries, by E. E. Hale.

From Dr. R. F. Burleigh, Manhattan, Kas.: The Medical Bulletin, 2 vols. in numbers.

From the Author, J. Ellis: The New Christianity (unbound).

From President G. T. Fairchild, Manhattan, Kas.: Proceedings National Educational Association, 1888.

From Secretary I. D. Graham, Manhattan, Kas.: American Almanac, 1888. Industries of Kansas City. Overland Guide to the Pacific Coast. Electricity, Iron, Coal and Petroleum, Steam (pamphlets). Peffer's Tariff Manual. All unbound.

From Gen. A. W. Greely, Washington, D. C.: Ray's Expedition to Port Barrow. Turner's Natural History of Alaska. Nelson's Natural History Collections in Alaska. Report of the Chief Signal Officer, 1887, Parts I and II.

From Dr. Curtis G. Huzzey, Pittsburgh, Pa.: Denslow's Principles of Economic Philosophy.

From S. A. Kean & Co., Chicago, Ill.: The Laws of Municipal Bonds.

From Prof. W. A. Kellerman, Manhattan, Kas.: Journal of Mycology, Vols. 1 to 4, unbound.

From the Author, Hon. John D. Knox, Topeka, Kas.: Paths to Wealth.

From D. E. Lantz, Manhattan, Kas.: The School Supplement, 3 Vols., unbound. Penna. School Journal 1879 and 1880. Treatise on Surveying Instruments. Wentworth's Complete Algebra. The Dream (Zola).

From Hon. John A. Martin, Topeka, Kas.: Kansas Addresses.

From Lieut. J. F. Morrison, Manhattan, Kas.: Army Regulations for 1889.

From *Louis B. Parker*, Manhattan, Kas.: Ornithologist and Zoölogist, Vols. 8, 9, and 10. American Entomologist, Vol. 1. Horticultural pamphlets (12).

From *Prof. E. A. Popenoe*, Manhattan, Kas.: Noxious Insects of Illinois (Le Barron). Report of the Central Park Commissioners, 1870. Nursery, seed, and flower catalogues, 24 Vols.

From *Prof. E. M. Shelton*, Manhattan, Kas.: Transactions N. Y. Agricultural Society, 1883-6.

From *Dr. Martin Wilckens*, Vienna, Austria: Grundrisz der Landwirtschaftlichen Haustierlehre.

From *Dr. S. W. Williston*, New Haven, Conn.: Diptera of North America. Health Reports, New Haven, Conn.

From *Michigan State Board of Health*: Annual Reports, 1887, 1888. Proceedings of Michigan Sanitary Conventions.

From *U. S. Commissioner of Education*, Washington, D. C.: Annual Report, 1886-7.

From *N. H. Winchell*, State Geologist, Minneapolis, Minn.: Geology of Minnesota, Vol. 2.

From *Kansas State officials*: Report of the Board of Health, 1888. Report of the Superintendent of Public Instruction, 1887-8. Report of the Railroad Commissioners, 1888. Report on the Price-Raid Claims. Report of the State Board of Agriculture, 1887-8. Public Documents, 1887-8, 2 Vols.

From *officials of other States and Countries*: Statistique Agricola de la France. Alabama as It Is. Agriculture of Alabama, 1887, 1888. Agriculture of Georgia, 1887, 1888. Agriculture of N. J., 1887. Agriculture of Michigan, 1888. Farm Statistics of Massachusetts, 1886-7. Horticulture of Massachusetts. Horticulture of Minnesota, 1888. Michigan Forestry Commission, 1888. Vermont Agricultural Report, 1888. Report of State College of Pennsylvania, 1887. Report of the Minnesota University, 1888.

From *officers of Experiment Stations*: Wisconsin Report, Vol. 5. Pennsylvania Report, 1886, 1887. Connecticut Report, 1886, 1887. Tennessee Report, 1886. Cornell University Report, 1888. Massachusetts Report, 1887. Colorado Report, 1888. Ohio Report, 1888.

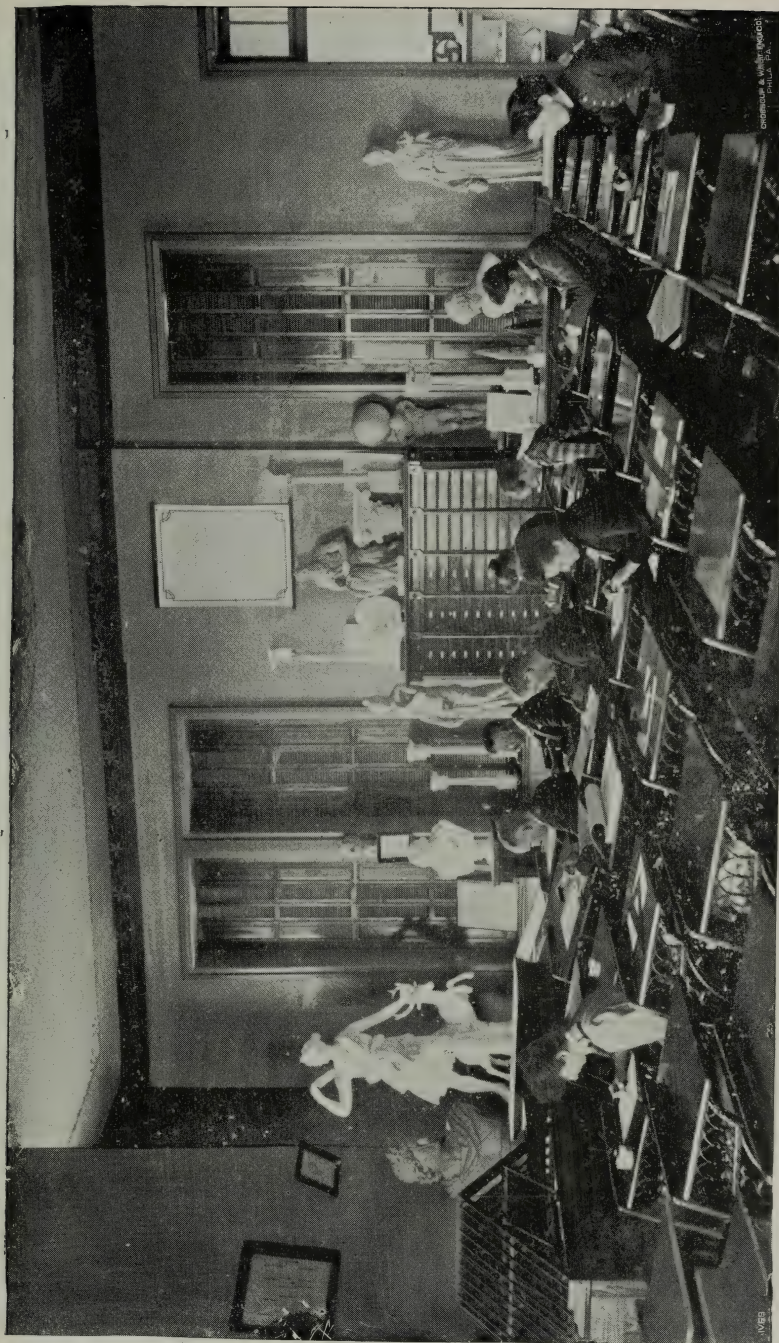
DEPARTMENT OF INDUSTRIAL ART AND DESIGNING, 1888-9.

To the Board of Regents—GENTLEMEN: I herewith submit my twelfth annual report of the Department of Industrial Art and Designing.

During the school year 1888-9, I have taught classes as shown in this schedule:

TERMS.	FREEHAND.		MECHANICAL.				TOTALS.
	Primary.	Advanced.	First year.	Second year.	Third year.	Special.	
Fall.....	5	11	125	.....	.....	7	148
Winter.....	98	13	25	.....	.....	8	144
Spring.....	14	14	2	59	29	7	125
Totals.....	117	38	152	59	29	22	417

Of these classes, that in primary freehand during the winter term met three times, and that in perspective, in the spring term twice a week; all other



DEPARTMENT OF INDUSTRIAL ART.

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1900

classes received daily instruction. In addition to the enumerated classes, the members of the class in surveying drew under my supervision a large map, 36x56 inches, of the College farm. Considerable assistance was also given to a few students of special work in plant-anatomy drawing. This work was done in my class-room on afternoons and Saturdays.

For the text-books used and the methods pursued, I refer you to the annual catalogue, to my former reports, and to the Commencement exhibition of a collection of finished drawings from all classes, comprising several hundred plates.

Of work outside of the class-room, but directly in the interest of the College, permit me to mention the following: During the summer I planned, specified and superintended the building of the Experimental Horticultural Laboratory. In the fall I attended the Farmers' Institute at McPherson, the annual session at Hutchinson of the State Horticultural Society, and the annual meeting at Topeka of the State Teachers' Association. At all three of these meetings I read carefully-prepared papers. In the winter term I took part in the Farmers' Institute at Hays City, and lectured before the Farmers' Club at Magic, and before the Riley county teachers at Randolph. I also prepared a large landscape map in water colors of the College farm for the Agricultural Department of the United States for its exhibition at the Exposition Universelle at Paris. In the spring I attended the Farmers' Institute at Junction City, and lectured before the College in the Friday afternoon course. As in former years, I also edited a weekly column of "Kansas Educational Notes" for the *Industrialist*, and took my turn in the editorial work of the first page.

At the request of President Fairchild I prepared an historical sketch of the Kansas State Agricultural College for the "History of Education in the United States" to be published by the Bureau of Education of the Interior Department. The sketch will appear as a part of the volume on "Education in Kansas" edited by Prof. J. H. Canfield, of the State University. There never having been published a history of this College containing more than a thousand words, this sketch—measuring ten times as much, and written by one acquainted with the institution since 1869, and connected with it for over a dozen years—will probably form the basis of every history of the pioneer days of the institution for all time to come.

The appropriation by the State Legislature of \$600 for the equipment of my department, due July 1st of this year, will be sufficient to procure the long-needed furniture for the class-room, and to fill the most conspicuous gaps in the collection of models and studies.

Respectfully submitted.

J. D. WALTERS,

COLLEGE, June 30, 1889.

Professor of Industrial Art and Designing.

TELEGRAPH DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMEN: The annual report of the work under my charge for the year ending June 30th, 1889, shows the total enrollment of 133 students in the book-keeping classes of the year, as follows:

	Ladies . . .	Gentlemen.	Totals . . .
Fall term, one division.....	9	8	17
Winter term, three divisions . . .	37	51	88
Spring term, one division.....	10	18	28
Totals.....	56	77	133

During the winter term Professor Lantz had charge of one division of the class until the subject of Commercial Law was reached, when it was turned over to my charge. Compared with last year the enrollment showed 7 ladies, 60 gentlemen, total, 76 in telegraphy.

Under the instruction of Miss Agnes Fairchild, Assistant Librarian after January 20th, 1889, the work of instruction in telegraphy was carried on most satisfactorily.

The expenditures of the Telegraph Department were as follows:

Debits:			
Student labor.....	\$92 16		
Battery materials.....	55 82		
Freight and drayage.....	6 64		
Tacks, nails, lag screws, etc.....	1 05		
Telephone rental.....	40 00		
Refunded fees.....	3 00		
New battery room.....	8 10		
Electric bells.....	6 50		
Controlling clock for electric bells.....	5 00		
Replaced tools.....	2 75		
		\$221 02	
Department bills.....		222 32	
Inventory increase.....		6 68	
Total debits.....		\$450 02	
Credits:			
By cash received as fees.....	\$188 14		
Department bills.....	199 70		
		387 84	
Balance, expense.....		\$62 18	

Respectfully submitted.

COLLEGE, June 30, 1889.

I. D. GRAHAM,

Ass't Sec'y of Board, Sec'y of Faculty, Instructor in Bookkeeping and Commercial Law, and Sup't of Telegraphy.

DEPARTMENT OF MATHEMATICS, 1888-89.

To the Board of Regents—GENTLEMEN: The following statement will show the number of classes and students under my charge during the year ending June 30, 1889:

TERMS.	Number enrolled.	Number examined.	Number passed...
<i>Fall Term.</i>			
Trigonometry and Surveying (two divisions).....	35	33	31
Algebra (two divisions).....	68	66	53
Practice Surveying (six divisions, two hours per week).....	34	.....	34
<i>Winter Term.</i>			
Geometry (two divisions).....	69	63	61
Book-keeping (one division).....	28	23	20
<i>Spring Term.</i>			
Solid Geometry (two divisions, five weeks each).....	60	60	56
Algebra (two divisions).....	88	83	51
Practice Surveying.....	1	.....	1

The above statement represents only that part of the mathematical teaching in the College which came under my own immediate charge. The department has had the assistance of Lieut. J. F. Morrison, who taught the classes in arithmetic and a class in algebra during each term.

The work of the year has been in every way pleasant, and, on the whole, satisfactory. The classes in trigonometry and surveying did most excellent work. The use of a more modern text-book enabled them to comprehend the subject more readily, and to obtain a wider acquaintance with the science. The practice work in surveying was planned with a view to greater variety. The platting of the large maps was done to different scales, and thus was secured an independence of work impossible when, as formerly, the entire class drew maps to the same scale, and alike in all respects.

With the \$500 State appropriation, available July 1, we have planned to add to our equipment an engineers' transit, with polar attachment, a Johnson's improved plane table, a farmers' drainage level, together with rods, chains, and a complete outfit of platting instruments. These, with the instruments now in our possession, will make the equipment of this department equal to that found in the best schools of civil engineering in the West.

In geometry the classes of the winter and spring terms were unusually strong, and were enabled to do much original work in demonstrating theorems and solving problems, but more especially in geometrical constructions. Constructions involving plane loci were easy for the majority of the class.

I once more desire to call the attention of the Board to the fact that our course in algebra is too short to fully meet the requirements of the classes in trigonometry and applied mathematics. The number of failures in algebra is largely due to the rapidity with which the subject must be treated. To

take the topic more slowly would be still worse. We are doing the best that can be done under the present circumstances; but I fear that much is lost by the permanent discouragement of students, who, with more time for the course, could make a fair record in algebra.

Aside from the work of my department, the library has required a large amount of my time. The correspondence with reference to purchases, exchanges, and donations, together with all the responsibility for the management of the library, fell to my care. My work upon the *Industrialist*, in lectures, attendance upon farmers' institutes, etc., was as in previous years.

Respectfully submitted.

D. E. LANTZ, *Professor of Mathematics.*

COLLEGE, June 30, 1889.

DEPARTMENT OF ENGLISH LANGUAGE AND LITERATURE, 1888-89.

To the Board of Regents—GENTLEMEN: I have the honor to submit the following report of work in the Department of English, for the year ending June 30, 1889:

SUMMARY OF CLASSES AND ENROLLMENT.

Classes.	Gentlemen.	Ladies.	Totals.
FALL TERM.			
English Analysis, first year (four classes).....	69	50	119
Rhetoricals, fourth year.....	16	8	24
WINTER TERM.			
English Structure, first year, (three classes).....	74	53	127
Rhetoric, third year.....	39	14	53
Rhetoricals, fourth year.....	17	9	26
SPRING TERM.			
English Composition, first year, (three classes).....	66	51	117
English Literature, third year.....	26	11	37
Rhetoricals, fourth year.....	16	10	26

I have taught four classes daily, with a fifth class once each week. The First-year students continue in this department throughout the year, in drill work that is intended to lead to a ready and accurate use of language. The fall term is spent in study of grammar and the structure of the English sentence; the winter term in the study of the history, formation, and meaning of English words; and the spring term in the study of the principles and practice of composition. Once a week a drill in rhetoricals, consisting of memorizing, declamation, and composition, takes the place of the usual class work.

The work with the Third-year class was in rhetoric and literature. In the winter term they studied the principles of rhetoric in their relation to purity,

clearness, force, and elegance of expression, and their application to the choice and arrangement of thought in narration, description, and argument. The work of the spring term was such study of the history and character of English literature as can be made in the short time allotted. Important works of the different periods were read and discussed, and the use of the library urged as a means of developing a love for reading.

I have also had charge of the Fourth-year class in rhetorical. This class has met every Wednesday for instruction and drill. They have alternated with the Third-year class in delivering original orations from the chapel platform during the public hour, and each has prepared and delivered a graduating oration.

In addition to my class duties, I have taken my share of work on the *Industrialist*, in the chapel lecture course, and in the farmers' institutes.

Respectfully submitted.

O. E. OLIN,

Professor of English Language and Literature.

COLLEGE, June 30, 1889.

DEPARTMENT OF HOUSEHOLD ECONOMY AND HYGIENE, 1888-99.

To the Board of Regents—GENTLEMEN: The following report of my work during the College year ending June 12th, 1889, is respectfully submitted.

In the fall term the usual class of Fourth-year young ladies in English literature did good work in becoming acquainted with many of the thoughts of some of our best writers, and learned to form judgment upon new writings, by comparison with those known to be standard. The class numbered eight, and gained much toward a knowledge of the literature of their own language.

I also had two small classes in the kitchen laboratory. This industrial is especially for young ladies who have already had the term in household economy, and gives them an opportunity to do many kinds of cooking that cannot be brought into the course of the second year for want of time. The six young ladies last fall made preserves, pickles, jellies, and marmalade, canned fruits, dried fruits, made chow-chow, chili sauce, and mince meat, and baked nice cake. Although this was the first term of the work, it was very satisfactory, and the young ladies learned to do many things which come to most women only by hard experience in kitchens of their own.

The winter term gave me a class of 36 in household economy. This class came to me one hour per day for a lecture, and also spent one hour in the kitchen laboratory practicing cooking.

The lectures cover such topics as pertain to the equipment and arrangement of a kitchen—the washing of dishes, and the buying, preparing, and cooking of various foods. Beginning with bread, we go through the subjects of meats, cake, pie, pudding, table-drinks, and fancy desserts, glancing at the chemical

constituents, the use each article has in the economy of food, and the best ways to prepare it for the table, that it may be most appetizing as well as most digestible. Some attention is paid to selection in the market, especially in the buying of meats and vegetables; and the young ladies are required to draw plans for model kitchens, and to do some essay work that shall embrace their knowledge of chemistry as applied to their household economy.

For class practice in the laboratory, divisions of twelve were most easily arranged this year. These divisions (each of which spends one college hour—fifty minutes—in cooking) are further divided so that three girls work at the same table. The work of Monday is so arranged that it results in a dinner at noon, which is eaten and paid for by members of the Faculty. This consists of four courses, and is entirely served by the three girls who stay to perform this duty.

The remainder of the week the work is apportioned to each division of three, so that one division has one kind of work that week, and from week to week the work is changed, so that each girl does each kind of cooking at least once.

On Thursday, from 90 to 120 ten-cent tickets are sold to the students, who, on presenting these tickets on Friday, receive a plate of lunch with a cup of hot coffee. Thus the food is disposed of, and the proceeds of the Friday lunches and the Monday dinners go far toward paying for the groceries consumed in this department.

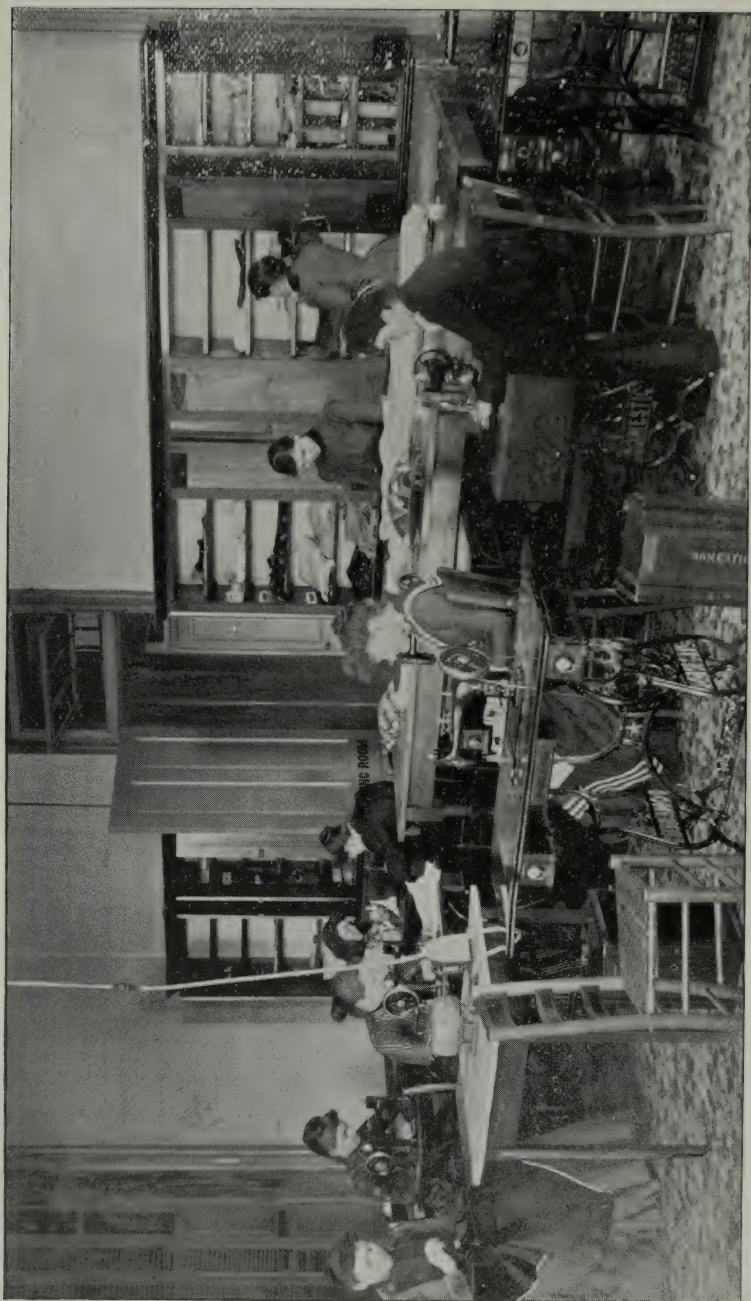
The class this year, although largely composed of younger students than usual, did much work in a satisfactory manner.

It may be of interest to know that of \$179.16 spent for groceries, the expenditures in staples were divided in this manner: Flour, \$18.45; meat, \$34.60; sugar, \$20.20; milk, \$5.64; eggs, \$8.60; butter, 20.40; coffee, \$6.

During the term the usual tea parties, when the Regents tested the food cooked, and the evening party, had time and place as in former years.

The spring term gave me a class of eight Third-year girls in special hygiene, who studied healthful surroundings for the race in general, and for themselves in particular. They did much reading up from various authorities on hygienic subjects, and put the ideas thus gleaned into essay form for the benefit of each other as well as the good of themselves.

This term also brings the dairy work, and 26 girls worked four hours per week in the dairy. They made 318 pounds of butter, skimming the milk, churning the cream, washing, salting, working and moulding the butter. Two cheeses were made, and several times sour milk was made into cottage cheese. Considering the fact that 26 girls, scattered through four rooms, worked 50 minutes each day, the results were good; but I believe if additional cooking were given in the spring term, instead of holding the whole time for dairying, more would be accomplished. There is relatively much more time given to dairying than to cooking, when we consider the number of processes used in each.



SEWING DEPARTMENT.

The following summary will show the direction of expenditures during the year:

Debit:		
Materials for cooking		\$179 16
New equipment		22 80
Paper (Printing Department)		90
Ice.....		11 25
Repairs		2 10
Student labor		7 20
Milk (for dairy).....		72 59
Total.....		\$296 00
Credit:		
Cash, lunches and dinners.....		\$172 92
Cash, butter.....		44 60
Increase of inventory.....		14 40
Expenses.....		64 08
Total.....		\$296 00

One young lady of last year's graduating class has been pursuing post-graduate work in the Domestic Department during the entire year. She has done advanced work in the department, especially experimenting in the line of applying chemistry directly to the cooking of every-day foods, and learning reasons for certain results of especial combinations. Her work has been largely toward making cooking an exact science.

In addition to the class work, I have taken an equal share, with other members of the Faculty, in the public lectures, editorial work on the *Industrialist*, and general work of the Faculty. I attended two farmers' institutes, one at Peabody, and one at El Dorado.

The department has grown during the past year, and bids fair to improve in time to come. It has attracted the attention of colleges in other States, and other institutions are following the lead of this college in establishing domestic departments for the education of young women.

Respectfully submitted,

NELLIE S. KEDZIE,

Professor of Domestic Economy and Hygiene.

COLLEGE, June 30, 1889.

SEWING DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMEN: The following report of work done in the Sewing Department ending June 30th, 1889, is respectfully submitted.

I have had five classes each day during the entire college year, and the classes larger than ever before. The enrollment shows as follows: Fall term, 94; winter term, 84; spring term, 74.

In the fall term the classes were so large that during the latter part of the term Miss Marlatt, a post-graduate taking a special course in cutting, fitting, and fine sewing, assisted me in my department two hours each day.

The work done by the department during the year consists of 200 dresses and 700 miscellaneous articles, comprising all kinds of sewing. Most of it was plain, practical work, very little time being given to fancy work. About thirty young ladies learned to cut and fit dresses by measure.

The following will show somewhat the line of expenditures during the last year:

Debit:			
Inventory	\$555 45		
Cash expenditures.....	58 73		
Department bills.....	37 25		
			\$651 43
Credit:			
Cash.....	\$5 00		
Inventory	615 05		
			620 05
Balance, materials used.....			\$31 38

Respectfully submitted.

COLLEGE, June 30, 1889.

MRS. ELIDA E. WINCHIP.

MECHANICAL DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMEN: I have the honor of submitting the report of the Mechanical Department, which is as follows:

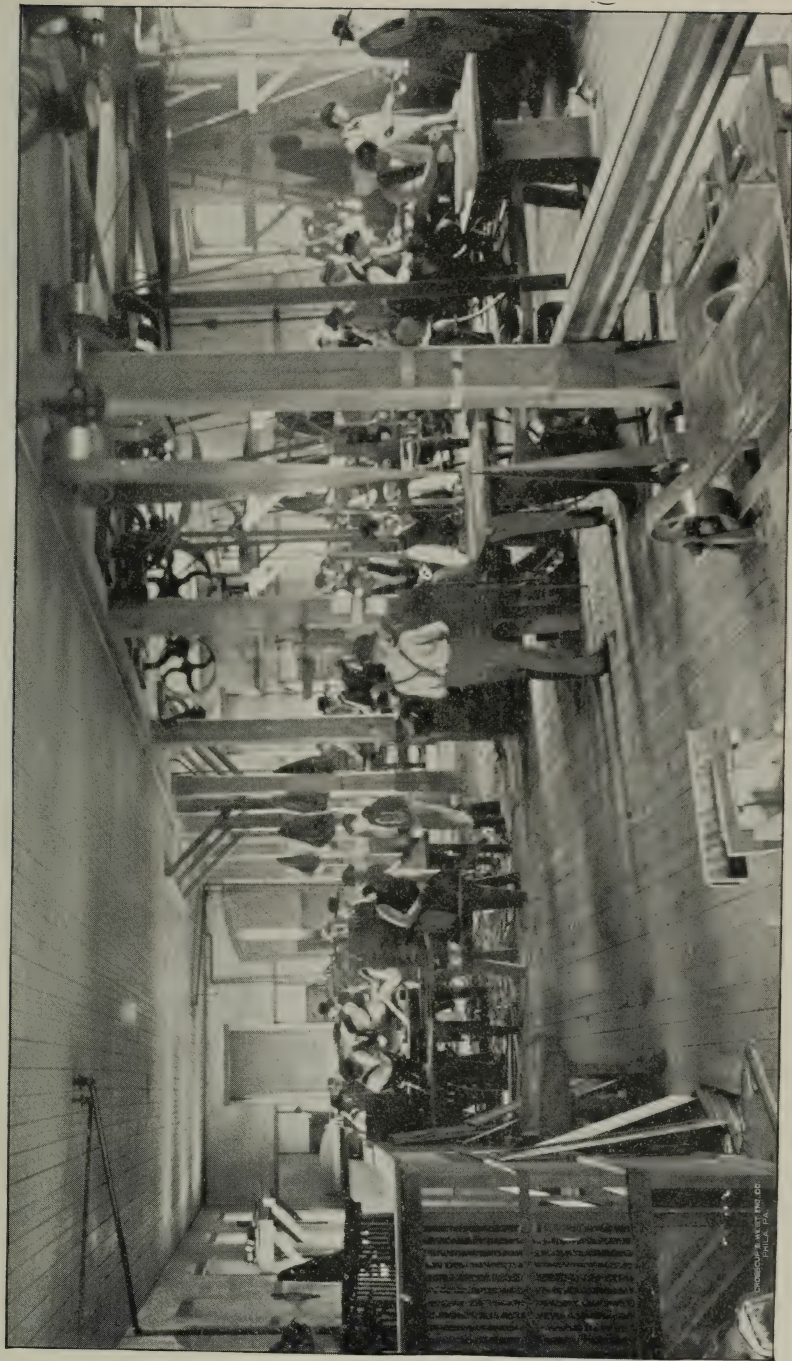
The total enrollment for the three terms has been 346; in the fall term, 114; 133 in the winter; 93 in the spring. Six were assigned to iron work. The work in the shop has been along the same lines as followed last year, and the results are of the same character. Mr. G. N. Thompson, foreman, resigned, and Mr. W. L. House, a journeyman wood-worker, was appointed in his place.

The financial statement is as follows:

Current expense.....		\$4,677 80
Receipts.....	\$3,186 30	
Inventory increase.....	327 61	
Total	\$3,513 91	
Expense	1,163 89	
Totals	\$4,677 80	\$4,677 80

An estimate of the ways in which this deficit has been expended shows lumber and assistance as the two large items:

Lumber	\$350 00
Assistance.....	350 00
Repairs of small tools.....	60 00
Cleaning shop.....	60 00
Running engine.....	100 00
Running tools, oiling and general care	50 00
New stack for boiler.....	40 00
Drawings used.....	7 00
Lumber dropped from inventory as useless.....	92 00
Tools lost, broken, and worn out	45 00
Miscellaneous.....	9 89
Total.....	\$1,163 89



CARPENTER SHOP.

In the winter term two classes, numbering respectively 23 and 16, were taken through a course of theoretical and applied mechanics. Besides the mathematics of the course, every effort was made to show the intimate connection between pure mathematics and practical applications.

In the spring term 23 young men listened to lectures each day on mechanical and civil engineering. The only text-book in the least suitable, which has been used, namely, Mahan's Civil Engineering, is unfitted for so short a term, and for students who are unfamiliar with elementary engineering principles.

A course of lectures has been designed and followed, therefore, which covers the essential elements of engineering in all branches, and such lines of illustration used as will most likely fall under the observation of the student. The lectures may be divided into three essential parts, besides an introduction on the transformation of energy and motors:

1st. "Mechanical operations of forces," as cutting, shearing, grinding, bending, crushing, etc.

2d. "Materials of construction," the properties, strength, and uses of stone, mortars and cements, wood, iron, etc.

3d. "Constructions," as foundations, roads, bridges, roofs, etc.

With these lectures the student uses a very complete engineers' book (Haswell's Engineers' Pocket-book of Rules, Tables, and Formulæ), which he is taught to intelligently use. Students also hand in written reports on engineering subjects which have been assigned to them. These subjects require research in the library, inspection of existing work in the neighborhood, or, more frequently, original work by the student.

Respectfully submitted.

O. P. HOOD,

Supt. Mechanical Dept., Instructor in Mechanics and Engineering.

COLLEGE, June 30, 1889.

PHYSICS DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMEN: I have the honor to make the following report for the year ending June 30th, 1889.

During the fall term I instructed four classes: One in physics and meteorology, one in English grammar, and two in arithmetic. The class in physics and meteorology, a Fourth-year class, devoted the first ten weeks to a study of the subjects of light, electricity and magnetism, the last four weeks being given to the study of meteorology.

During the winter term I had charge of four classes, all in the preparatory department: three classes in English grammar and one in arithmetic.

In the spring term I instructed one class in physics, and two classes in English grammar. The Third-year class in physics gave their attention for the ten weeks to the subjects of hydrostatics, pneumatics, sound, and heat.

In addition to class instruction, I have taken meteorological observations during the year.

SCHEDULE OF CLASSES.

<i>Studies.</i>	<i>Young men.</i>	<i>Young women.</i>	<i>Total.</i>
FALL TERM.			
Physics and Meteorology.....	17	8	25
(b) English.....	20	10	30
(b) Arithmetic.....	19	20	39
(a) Arithmetic.....	12	6	18
WINTER TERM.			
(b) Arithmetic.....	8	1	9
(b) English (three divisions).....	62	30	92
SPRING TERM.			
Physics.....	24	9	33
(b) English (two divisions).....	30	18	48

FINANCIAL STATEMENT.

To inventory of apparatus and cases.....	\$2,210 33	
Appropriation for apparatus and cases.....	500 00	
Freight and expressage.....	7 79	
Incidentals.....	2 00	
Student labor.....	6 30	
Department bills.....	10 59	
Bills payable in favor of Mechanical Department.....	38 85	
By inventory of apparatus and cases.....		\$2,617 43
Department transfer.....		132 50
Balance.....		25 93
Totals.....	\$2,775 86	\$2,775 86

Respectfully submitted.
COLLEGE, June 30, 1889.

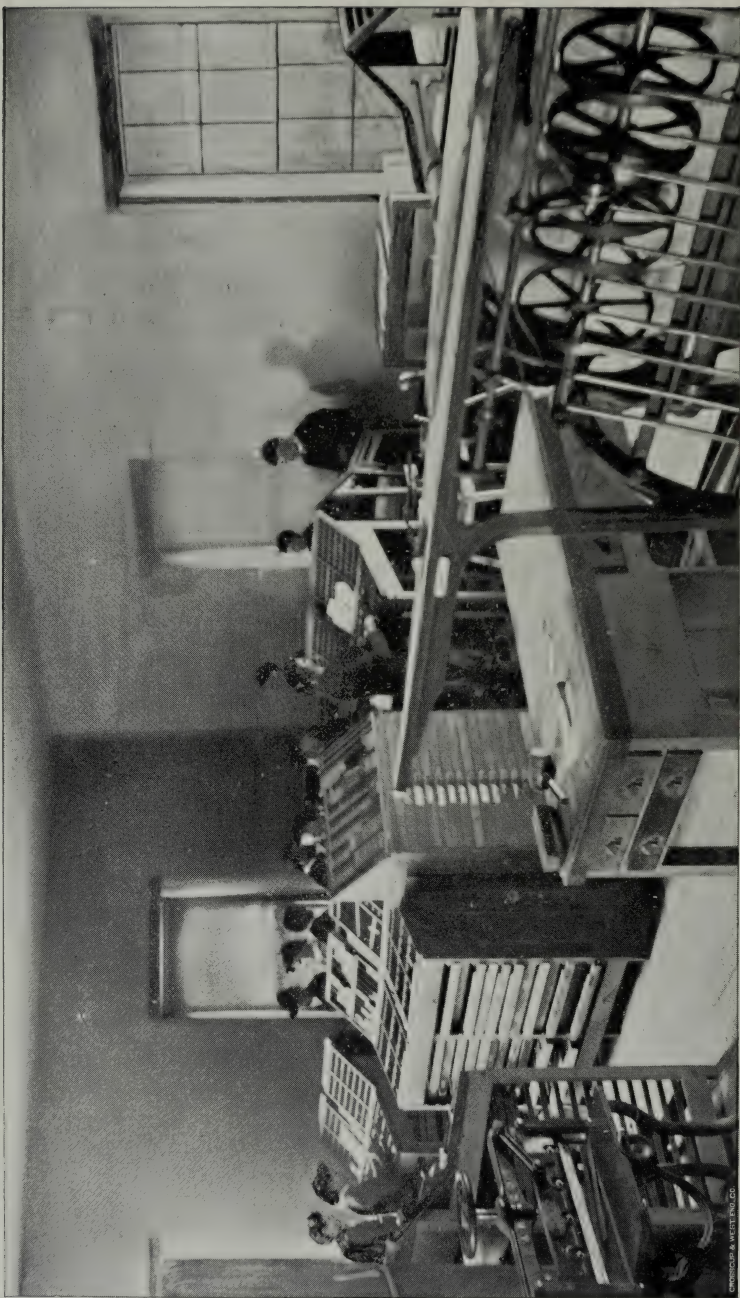
F. J. ROGERS.

DEPARTMENT OF MUSIC, 1888-89.

To the Board of Regents—GENTLEMEN: I have the honor to submit the following report:

ENROLLMENT.

	<i>Females.</i>	<i>Males.</i>	<i>Totals.</i>
Fall term, 1888:			
Instrumental music class.....	24	11	35
Singing class "B".....	35	36	71
Singing class "A".....	14	7	21
Orchestra.....			10
Totals.....	73	54	137
Winter term, 1889:			
Instrumental music class.....	26	7	33
Singing class "B".....	21	38	59
Singing class "A".....	24	23	47
Orchestra.....			13
Totals.....	71	68	139
Spring term, 1889:			
Instrumental music class.....	20	7	27
Singing class "B".....	9	13	24
Singing class "A".....	27	18	45
Orchestra.....			21
Totals.....	56	40	117



PRINTING DEPARTMENT.

In addition to the instruction given in the above classes, chapel services, and other regular duties, the department has furnished music at the following college exercises: The fall-term social, and Alpha Beta exhibition; the winter-term social, and exhibition of the Webster Society; the spring-term social, the exhibition of the Hamilton Society; the baccalaureate sermon, three selections; the Undergraduate exhibition, six selections, three instrumental and three vocal; the annual address, one selection; and on Commencement day, six selections, three vocal and three instrumental.

Respectfully submitted.

A. B. BROWN, *Professor of Music.*

COLLEGE, June 30, 1890.

PRINTING DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMEN: Eighty different students took printing as their "industrial" during the year just closed. Of these, 52 were young men and 28 young women. Four of these students were members of the Fourth-year class, 12 belonged to the Third-year class, 33 to the Second-year class, and 31 to the First-year class. The attendance by terms was as follows: Fall term, 45; winter term, 54; spring term, 29; total for the three terms, 128.

No change of any importance was made during the year in the classes for beginners, they being required to devote all of the first term to the study of the principles of composition, and to the study of and drill in punctuation.

The Third-year class, and those of the Second-year class who were well advanced, have had instruction and practice in the typographical composition of "display" advertisements, and in commercial forms in every-day use. In this work, a system of printed slips, each containing a printed line, showing all the type of the department in lines of various lengths, and each line mounted on a block its exact size, proved a great aid. By means of these printed lines, the student is enabled not only to easily outline a given piece of work, but to compose it in fact, a line at a time, and to proceed with the work rapidly and understandingly, until the job lies finished before him; then, if he desires to put the form in type, he has only to go to the cases and "set" the lines thus chosen with the least possible expenditure of time, and no wear and tear of materials in tedious experimenting.

During the fall term, the department printed two bulletins for the Experiment Station, but since that time they have been printed elsewhere. The *Industrialist* has been printed regularly during the college year, the two advertising editions of 10,000 copies each having been issued as usual in August and June. The average weekly circulation of the *Industrialist* for the year was 2,200 copies, of which a very small per cent. were cash subscriptions. Of the multitude of small jobs printed during the year, I need not speak.

The increase in the inventory of this department, as noted in the appended financial statement, is due chiefly to the purchase of new type with which to print the Experiment Station bulletins. This type was bought and paid for by the Council of the Station, who allowed this department to use it and pay for it in printing.

The transfer to another printing office of the Experiment Station bulletins—which work this department did at a profit—coupled with two serious breaks sustained by our cylinder press, have done much to increase the cash expense as compared with that of last year. It is, however, about the average of former years.

FINANCIAL STATEMENT.

DEBIT.		CREDIT.	
Inventory for 1888	\$3,175 75	Inventory for 1889.....	\$3,450 14
Cash expense.....	1,364 70	Cash receipts.....	340 93
Department bills.....	105 42	Department bills	348 00
		Balance expense.....	506 80
Total.....	\$4,645 87	Total.....	\$4,645 87

Respectfully submitted.
COLLEGE, June 30, 1889.

J. S. C. THOMPSON,
Superintendent of Printing.

MILITARY DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMAN: I have the honor to submit the following annual report.

The work in my department for the year has consisted of two drills per week and a course of lectures on military science as prescribed in the catalogue. In addition, some of the students have studied and recited to me from Upton's Infantry Tactics. The recitations were weekly, but the class was divided into four sections to suit the convenience of the students, making four recitations per week for me.

The number of students taking the drill were as follows:

Fall term.....	125
Winter term.....	101
Spring term.....	114
TACTICS.	
Fall term.....	18
Winter term.....	16
Spring term.....	10
LECTURES ON MILITARY SCIENCE.	
Winter term.....	43
Spring term.....	31

In addition to the work in my own department, during the fall term I had charge of one class in algebra and three in arithmetic; in the winter term

one class in algebra, two in arithmetic, and one in geography; in the spring term one class in algebra, two in arithmetic, and one in geography.

Respectfully submitted.

J. F. MORRISON,

(Second Lieut. 20th U. S. Infantry,)

Professor Military Science and Tactics.

COLLEGE, June 30, 1889.

DEPARTMENT OF HISTORY AND CONSTITUTIONAL LAW, 1888-89.

To the Board of Regents—GENTLEMEN: I herewith present the following report of work done in this Department, during the year ending June 30, 1889:

CLASSES AND ENROLLMENT.

<i>Classes.</i>	<i>Ladies.....</i>	<i>Gentlemen.</i>	<i>Totals.....</i>
FALL TERM.			
General History, third-year class.....	6	26	32
English Grammar, first-year class.....	16	29	45
Rhetoricals, five sections, second- and third-year classes.....	45	75	120
WINTER TERM.			
United States History, three sections, first-year class.....	54	51	105
Rhetoricals, five sections, second- and third-year classes.....	54	71	125
SPRING TERM.			
Constitutional Law, fourth-year class.....	9	17	26
Rhetoricals, five sections, second- and third-year classes.....	43	64	107

As but one term is allotted to general history it is impossible to do more than touch briefly upon the chief events. Private reading, however, was encouraged, interesting and instructive books were recommended, and every effort was made to arouse a desire for more information than the text-book contained.

One hundred and five of the First-year students took United States history, and it was therefore thought best to divide the class into three sections, each reciting daily. Johnston's text-book was used, and gave thorough satisfaction. Special emphasis was placed upon the political and social history of the country.

The Fourth-year students studied Cooley's Principles of Constitutional Law during the spring term. Discussion by members of the class on all doubtful points was encouraged, and considerable interest was manifested. Thorough preparation for citizenship was the main object of the course.

In addition to the work above mentioned, the entire rhetorical work of the Second- and Third-year classes was assigned to me. This involved a great deal of labor outside of class-room, as each of the Second-year students was required to present an essay, declamation or original oration every two weeks, and each of the Third-years every three weeks. During the year

each member of the Third-year class was required to deliver before the whole College one declamation and two orations. All essays and orations were corrected and returned, and many private rehearsals were given.

Respectfully submitted.

FRANCIS H. WHITE,

Instructor in History and Constitutional Law.

COLLEGE, June 30, 1889.

VETERINARY DEPARTMENT, 1888-89.

To the Board of Regents—GENTLEMEN: During the past year I have taught classes as follows: In the fall term the Third-year class in physiology, numbering thirty-five, in two sections. Though Martin's Human Body has been used as a text-book, it has been my purpose to teach the subject in its comparative aspect, using for purposes of illustration the skeletons of the domestic animals in the College museum.

In the winter term the Fourth-year class in zoölogy was under my instruction. Owing to the unsettled state of the museum it was very difficult to procure proper specimens for purposes of illustration; so progress was materially interfered with, but the material at hand was used as far as possible. At the close of the term ten lectures were given to the subject of veterinary science, following, as far as possible in the short time allowed, the course as laid down in the catalogue. Of course in ten "hours" of fifty minutes each, nothing like an adequate understanding of the subject could be given. For this reason it would seem desirable to greatly lengthen the course if it be continued at all. In the spring term the Fourth-year class in geology was assigned to my charge; and here, also, the lack of museum accommodation was greatly felt, it being necessary, on account of lack of cases, to put the geological specimens in barrels for preservation. It is to be hoped that some provision can be made whereby these specimens may be exhibited during the coming year.

During the entire year much of my time has been taken in care of the museum, it being necessary to transfer the zoölogical and geological specimens from the Horticultural and Chemical buildings to the Museum building. Besides putting the old specimens in order, new specimens, never before exhibited, have been placed in cases and labeled; among these the Jordan collection of fishes, and the Calkins and Popenoe collections of shells may be mentioned as the most extensive.

In the Experiment Station my time has been occupied in the study of such diseases as could be found prevailing in the neighborhood. For the reason that lack of means prevented many extensive trips, material has not been so abundant as to give the best results. Abortion in cattle has been one subject of special study and experimentation. The trial of preventive

measures first advocated by Prof. Bouley, of Paris, would seem to indicate that this common disease is to a great extent preventable. Owing to lack of facilities, only indirect investigations of hog cholera could be made. But from numerous letters from breeders of swine, it would seem that this disease is very prevalent in the State. An apparently undescribed disease of cattle has been studied, but as only a few cases were observed, nothing of importance as a preventive has been discovered. Cases of poisoning by corn fodder have been studied, and may be the subject of a further report.

I have taken my regular turn in writing for the *Industrialist*, and at farmers' institutes.

Respectfully submitted.

COLLEGE, June 30, 1889.

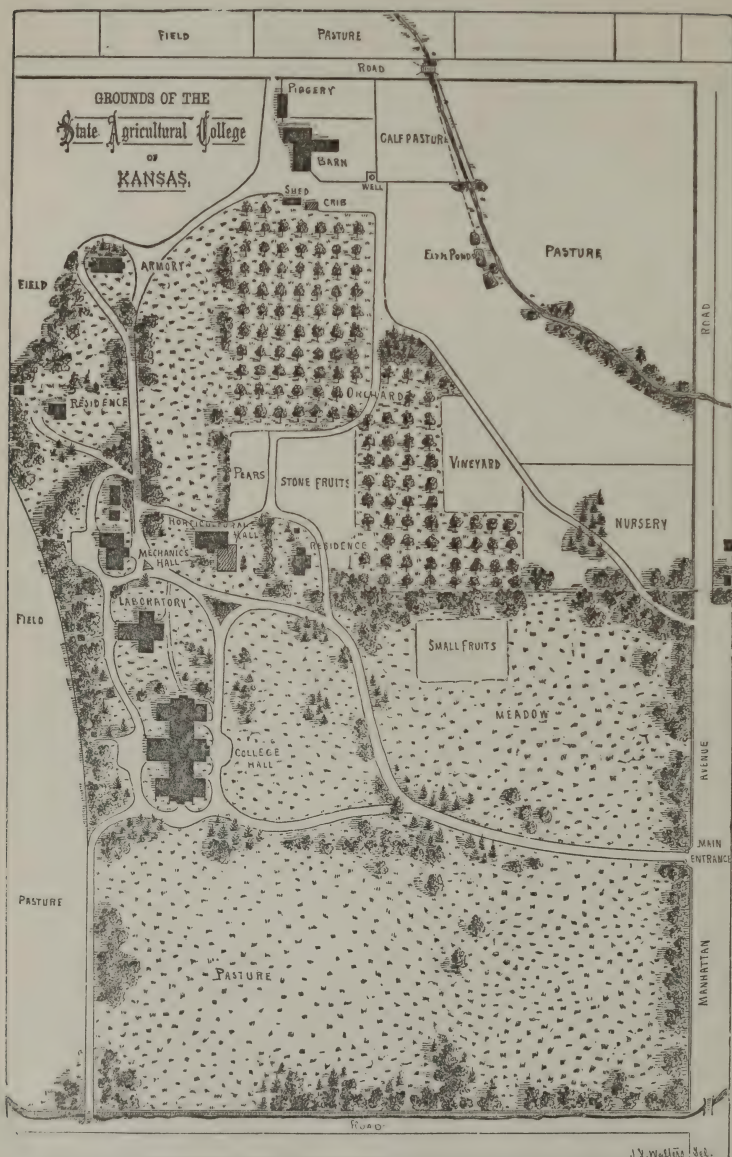
R. F. BURLEIGH.

ANNUAL REPORTS

OF

COLLEGE DEPARTMENTS.

1889-90.



REPORTS.

PRESIDENT'S REPORT, 1889-90.

To the Board of Regents—GENTLEMEN: I present herewith a full report of matters under my own personal oversight during the year ending June 30th, 1890, referring to the several reports of Professors and Superintendents for more minute details of instruction and expenditures.

The general College discipline, in spite of increased numbers, has remained as heretofore in my hands, supported by the entire Faculty through regular weekly meetings. In this body a unanimity of purpose and sentiment has made the work easy. A few changes in the personnel have occurred to modify the general action. Most notable of these changes came by the resignation, January 1st, of Professor E. M. Shelton, who for nearly sixteen years had held the chair of Agriculture, and was the oldest member of the Faculty. He has gone to take the position of Government Instructor in Agriculture to the Province of Queensland, Australia. To fill completely the large place left vacant by this retirement of one whose long experience in Kansas farming was so widely known and trusted, was not expected at once. Professor C. C. Georgeson, called to the chair after extensive correspondence, began his work January 1st, and has taken hold of the duties with skill and energy. The retirement of Professor R. F. Burleigh, in July, upon the decision to curtail expenses by distributing to other professors for a year the duties of the Professor of Physiology, makes the only other change in the Faculty. In the group of assistants, a single change has been made by withdrawal, September 1st, of Miss Agnes M. Fairchild from the place of Assistant Librarian, and the appointment of Miss Jennie C. Tunnell instead. By special arrangement under direction of the Board, the following persons have aided in teaching, while pursuing post-graduate or other study: Miss Bertha Bacheller, Miss Abbie L. Marlatt, and Miss Julia R. Pearce.

The standing committees of the Faculty for the current year were as follows:

Farmers' Institutes—Professors Failyer, Shelton, Popenoe, Walters, and Kellerman.

Post-Graduate Courses—Professors Popenoe, Shelton, Failyer, Kellerman, and Walters.

Museums—Professors Kellerman, Failyer, Popenoe, Graham, and Hood.

Library—Professors Lantz, Shelton, Failyer, Popenoe, and Olin.

Examinations and Grades—Professors Graham, Lantz, Olin, Morrison, and White.

Public Exercises—Professors Olin, Shelton, Brown, Morrison, and White.

Social and Literary Entertainments—Mrs. Kedzie, Mrs. Winchip, Professors Brown, Morrison, and White.

Buildings—Professors Hood, Failyer, Popenoe, Kellerman, and Walters.

Catalogue, Blanks, etc.—Professors White, Lantz, Graham, Olin, and Thompson.

Prof. Georgeson filled the vacancies made by resignation of Prof. Shelton.

GENERAL ROUTINE.—The routine of duties in all departments has remained essentially unchanged. Attendance upon daily and weekly exercises in the chapel has been required in the usual way and without friction. No serious case of breach of discipline has occurred anywhere to mar the uniformly pleasant relations between students and the members of the Faculty.

The following has been the course of Friday afternoon lectures:

Prof. Kellerman, September 20th, "The Nervous System."

Prof. Hood, October 4th, "The Phonograph."

Mrs. Kedzie, October 25th, "Woman's Increasing Responsibilities."

Prof. Olin, November 9th, "Time-Keeping."

Prof. Thompson, November 29th, "Manly Development from Sports."

Prof. Brown, January 10th, "Rhythm and Discipline."

Mr. Noble L. Prentis, January 24th, "Stories and Story-telling."

Prof. White, February 14th, "Freedom: Its Nature and Development."

Pres. Fairchild, March 7th, "Yellowstone Park."

Prof. Georgeson, March 21st, "In Tokio, Japan."

Prof. Failyer, April 4th, "Something about Glass."

Prof. Popenoe, April 18th, "Tropical Fruits."

Prof. Graham, May 2d, "Our Neighbors."

Prof. Lantz, May 16th, "The Story of Ulysses."

In alternation with these lectures, the chapel was occupied by the public rhetorical exercises of the Fourth-year and Third-year classes, presenting before students and officers original pieces upon a variety of timely topics. All four of the literary societies presented entertaining programmes upon their anniversaries, and united in procuring a public lecture at the close of the year. This last was given by Mr. B. J. Radford, of Eureka, Illinois, upon "The Way and End of Culture." Each term has had its social gathering under the auspices of a committee of the Faculty, with provision for some entertaining exercise in the chapel.

ATTENDANCE.—The total enrollment of students has been larger than ever before, for the first time going beyond the 500, so often set as the desirable figure.

Post-graduate.....	5	6	11
Fourth-year.....	22	6	28
Third-year.....	40	23	63
Second-year.....	68	37	105
First-year.....	194	113	307
Special course.....		1	1
Totals.....	329	186	515

An analysis of attendance shows that 515 students were in attendance from 62 counties of this State and 16 other States, Territories, and foreign countries. Of the counties represented, Riley leads, of course, with 174, of whom 66 have their homes in Manhattan city, 26 are here for the sake of College privileges only, 44 live in the county with Manhattan for post-office, and 38 dwell in other parts of the county. Pottawatomie comes next with 24, Jefferson and Shawnee send 21 each; Wabaunsee 19, Marshall 14, Johnson and Linn 11 each; Clay 10; Morris and Osage 9 each; Geary, McPherson, and Washington 8 each; Cowley 7; Dickinson, Osborne, Republic, and Butler 6 each; Atchison, Jackson, Philips, Sumner, Wilson, Woodson, and Wyandotte 5 each; Anderson, Miami, and Rice 4 each; Brown, Coffey, Graham, and Harper 3 each. Eight counties are represented by two students to each, and eighteen have a single representative. Other States and foreign countries represented show the following numbers: Arizona 1, Arkansas 1, California 1, England 1, Illinois 2, Indian Territory 1, Iowa 5, Missouri 8, Nebraska 3, New Mexico 2, North Carolina 1, Oklahoma 1, South Dakota 1, Texas 1, Utah 3, Wales 1.

Farmers' children hold the fort 342 strong, all the ten post-graduates and twenty of the twenty-seven graduates belonging to that guild. Mechanics of various kinds are represented by 24, business men of all kinds by 49, editors and other professional men by 24, and miscellaneous officials and laborers by 12.

The average age of the 331 young men on March 1st, last, was 20.74 years; that of the 181 young women was 18.25; and the average of all was 19.93 years, the highest on record. The Fourth-years were 22.25 years old, the Third-years 20.27, the Second-years 20.45, and the First-years 19.49.

The industries pursued by the 27 graduates show that during their course all the 21 young men had farming and gardening from two to eight terms, and carpentry from one to ten terms; and the six young women all had cooking and dairying for a term each, and sewing from one to six terms. Nine had more or less of printing. Three only had telegraphy. Of the 476 students below the Fourth-year class 237 took for one or more terms shopwork, 102 farming and gardening, 98 printing, 71 telegraphy, 18 music, 24 cooking and butter-making, and 139 sewing.

The above particulars are selected from the bulk of statistics on record to show the general character of the College as a school of industries for mature young men and women.

The whole body of students, aside from post-graduates and special students, in work by themselves, were gathered daily in classes as follows: Fall term 35, winter term 39, spring term 35. The industrial training classes numbered 23 throughout the year. Weekly or semi-weekly classes, including drill and vocal music, numbered 15 in each term. And yet, with this multitude of divisions, many of the classes were too large for best results of the instruction. I trust that a larger corps of instructors may be available for next year.

The general health of both students and Faculty has been excellent. With

the exception of a few cases of measles and a very few of scarlatina, sickness was confined to the prevailing influenza of the winter months by which nearly two-thirds of our community were more or less affected. A few students were thrown out of classes for this cause, several members of the Faculty were kept from their work for days, and one for several weeks; but no death occurred from any cause during the year. It is gratifying to record the fact that during the past ten years only three deaths among students have been recorded—one from drowning, one from typhoid fever contracted before the student entered college, and one from exposure during an attack of measles.

The year closed with the usual exercises of Commencement week, including the baccalaureate sermon by myself, the class-day exercises for invited guests, the Third-year exhibition Monday evening under direction of Professor White, the annual address Tuesday evening, by Dr. E. E. White of Cincinnati, upon "Character," and the Commencement exercises proper on Wednesday, followed by the alumni reunion.

The following persons received the degree of Bachelor of Science, having completed the full course and delivered an oration prepared under direction of Prof. Olin:

Samuel I. Borton.....	Hill Top, Greenwood county.
Frank A. Campbell.....	Wall Street, Linn county.
Arthur F. Cranston.....	Parsons, Labette county.
John Davis.....	Douglass, Butler county.
Grant W. Dewey.....	Mound City, Linn county.
Charles J. Dobbs.....	Linthorpe, England.
Charles W. Earle.....	Manhattan, Riley county.
Schuyler C. Harner.....	Leonardville, Riley county.
John W. Ijams.....	Ozawkie, Jefferson county.
Bertha S. Kimball.....	Manhattan, Riley county.
Harriet E. Knipe.....	Manhattan, Riley county.
Nellie P. Little.....	Manhattan, Riley county.
Ellsworth Thomas Martin.....	Wea, Miami county.
Silas C. Mason.....	Manhattan, Riley county.
Wilton L. Morse.....	Mound City, Linn county.
Albert E. Newman.....	Kingman, Kingman county.
Julia R. Pearce.....	Springdale, Arkansas.
Emil C. Pfeutze.....	Manhattan, Riley county.
William H. Sanders.....	Broughton, Clay county.
Emma Secrest.....	Randolph, Riley county.
Mary B. Senn.....	Enterprise, Dickinson county.
Ralph Snyder.....	Oskaloosa, Jefferson county.
George E. Stoker.....	North Topeka, Shawnee county.
Walter T. Swingle.....	Manhattan, Riley county.
Gilbert J. Van Zile.....	Carthage, Illinois.
Harry N. Whitford.....	Manhattan, Riley county.
Thomas E. Wimer.....	Wayne, Republic county.

The degree of Master of Science was conferred in course upon George E. Hopper, '85, for proficiency in physics and mechanical engineering, and upon Abbie L. Marlatt, '88, for proficiency in chemistry and domestic economy.

Both had pursued courses of study under direction of the Faculty, and prepared theses acceptable to the Faculty upon matters of personal investigation.

During the twenty-seven years of its existence the College has received over three thousand students, about a third of whom were young women. Most of them have come from farmers' homes, and after from three months to three years of study, have gone back to such homes without graduation.

The number of graduates up to 1890 is 232, of whom 73 are women. Graduates previous to 1877 pursued, with two exceptions, a classical course, and received the degree of Bachelor of Arts. Since 1877, all have received the degree of Bachelor of Science after a four-years course in the sciences, with good English training.

Of the 159 men, 5 are deceased, and the remainder are reported in the following occupations:

Farmers	30
Fruit-growers and nurserymen	5
Stock-raisers	3
Assistants in agricultural experiment stations	7
Assistants in U. S. Department of Agriculture	2
Editor of agricultural paper	1
Teachers and students of special sciences	10
Veterinary surgeon	1
Mechanics	7
Civil, electrical, and mechanical engineers	10
Contractors and builders	2
Architects and draughtsmen	3
General business men	26
Printers	4
Superintendents of public schools	5
Teachers of public schools	14
Students in other institutions	5
Officers in Army	2
Observer in Signal Service	1
Physicians and students of medicine	4
Dentist	1
Editors	4
Ministers	4
Lawyers and students of law	14
Total	167
In two occupations	13
	154

Of the 73 women, 3 are deceased, and the remainder are occupied as follows:

Housewives	29
At home	5
Teachers in public schools	19
Teachers and students of special sciences	7
Teachers of music	3
Teacher of art	1
Clerks or stenographers	3
Printer	1

Milliner and dressmaker	1
Assistant librarian	1
Total	70

The work of the College outside of direct teaching of students, extended to representation in the National Association of Agricultural Colleges, the State and National Teachers' Associations, as well as a number of local associations of the same nature; the State Horticultural Society and the American Horticultural Association; the annual meeting of the State Board of Agriculture and Farmers' Institutes; the Kansas Academy of Science, and numerous gatherings of the people addressed by one or more of the professors upon questions of popular interest.

The farmers' institutes have increased in interest and importance, but it has been necessary to limit the part of the College because of college duties demanding the time and energy of the Faculty. They have been so arranged in general as to keep professors from their classes usually not more than one day in a week, and have so distributed the work as to interfere least with college duties. Those of the past winter were held in the following places: Sedan, Chautauqua county; Stockton, Rooks county; Mankato, Jewell county; Girard, Crawford county; Hays City, Ellis county; Russell; Russell county; Enterprise, Dickinson county, and Topeka. In several others, not directly connected with the College, members of the Faculty were present by special invitation.

The *Industrialist* has done its usual good work in promoting interest in the College and its work, and in disseminating information of direct benefit to the industries of the State. The weekly issue has been about 2,000 copies; the list of persons entitled to receive it having slightly increased. The management has been, as heretofore, in the hands of the Faculty, with the President managing editor, and the professors in succession providing editorial matter. Special attention has been given the past year to notices of graduates and former students, and to reports of the student societies.

PERSONAL DUTIES.—The Fourth-year class, numbering 27, has been under my instruction one hour each day during the year in psychology, logic, and political economy, with the usual courses of lectures supplementing text-books. Each student prepared an essay upon some definite topic in psychology and another upon a question of interest in economic science, and these formed a part of the regular required work in those studies.

The general correspondence of the office has been in some respects more burdensome than usual, because of more extended interests and larger attendance; but its weight has been lessened somewhat by aid of a student or two with stenography and typewriting. The average daily mail requires attention to fifteen or twenty letters. Among these not a few during the past year have required extended explanation of ways and means and methods of this College, it being considered worthy of imitation by the new institutions recently organized in the new States and several of the Territories.

The books of the Secretary's office have been kept by Assistant Secretary

Graham, as for many years past, but all vouchers for expenditures, all bonds purchased, and all financial statements have come under my personal scrutiny.

The increasing burden of office duties has prevented my accepting invitations to represent the College in public gatherings to any great extent, but I have attended the annual meeting of the State Board of Agriculture, and several other meetings of farmers besides the regular farmers' institutes. In the Association of Agricultural Colleges and Experiment Stations I have a share of duties as one of the official corps. My talks before the farmers last winter took the form of a plea for "College Training in Agriculture." Twice during the year I have been absent from the office for a week or more, for the first time since my connection with the College having missed the regular weekly Faculty meeting.

As Chairman of the Station Council, I have had general acquaintance with the work going on in various departments of experiment, and have edited the annual report just ready for issue. The work of the Station is everywhere recognized as excellent, and promising still more in the future. Over 3,600 plats of vegetable growth are now under observation in experiments.

This department has made expenditures to the amount of \$7,256.88, of which \$3,325.28 were from special appropriations, \$3,198.05 from current income direct, and \$733.55 from the same fund through other departments.

The following is a detailed statement of—

<i>Expenditures, 1889-90.</i>		
Offices:		
Postage.....	\$195 30	
Stationery.....	89 12	
Labor, clerical.....	320 16	
Care of buildings, heating, etc.:		\$604 58
Janitors' wages, two men.....	\$940 00	
Students' wages.....	534 02	
Fuel.....	1,168 78	
Lights.....	204 73	
Tools and incidentals.....	33 90	
Buildings:		2,881 43
Repairs.....	\$1,266 66	
Improvements.....	200 00	
Grounds:		1,466 66
Care about buildings.....	\$17 60	
Improvement.....	12 30	
General, class rooms, offices, etc.:		29 90
Furniture.....	\$556 76	
Incidentals.....	361 24	
Sundries:		918 00
Water supply.....	\$300 00	
Advertising and <i>Industrialist</i>	311 50	
Farmers' Institutes.....	226 07	
Cuts for catalogue.....	138 00	
Commencement address.....	92 50	
100 diplomas.....	53 00	
Expenses of board meetings.....	37 00	
Expenses, State Board of Education.....	15 85	
Expenses of delegates to Agricultural and Horticultural Associations.....	182 39	
		1,356 31
Total.....		\$7,256 88
<i>Receipts.</i>		
From sales.....	\$64 67	
Department transfers.....	83 34	
		\$148 01
Increase in inventory.....		2,010 14
Actual expense.....		5,098 73

In concluding this report at the close of ten full years of service as President, I cannot refrain from calling attention to the comparative importance of the College at the two stages of growth as seen in 1880 and 1890:

	1880.	1890.
Members of Faculty	12	16
Assistants.....	1	11
Student assistants.....	1	5
Students.....	276	515
Post-graduates.....		11
Total graduates.....	56	232
Age of students, years	18.86	19.93
Productive endowment	\$220,329 36	\$495,316 07
Value of buildings and grounds.....	60,345 00	159,275 60
Value of apparatus, etc.	25,663 76	96,974 95
Total inventory, College and Station.....	86,008 76	266,749 95
Annual income, College and Station	19,320 49	55,805 45
Library, bound volumes	2,500	10,000

The contrasts here shown may give some faint conception of the general advancement in every line of work, educational and experimental. With these, the whole is respectfully submitted.

COLLEGE, June 30, 1890.

GEO. T. FAIRCHILD, *President*.

CHEMICAL DEPARTMENT, 1889-90.

To the Board of Regents—GENTLEMEN: My classes during the last year have been unusually large. They were large at the opening of the year, in September, 1889; a greater percentage than usual continued through the year; thus giving larger classes in my department during the spring term than ever before.

The required chemical course of this College, as you know, consists of a study running through the second year and one term in the third year. During the first or fall term of the year just closed, the class beginning the study of chemistry consisted of eighty-five members of the Second-year class. To these was given an elementary course in inorganic or mineral chemistry. The course is so shaped as to make the student familiar with chemical action, chemical processes, and chemical facts. It is studied as a science as far as the capabilities of the student will warrant. It is often said, (and truly of it as it is frequently taught,) that chemistry is desirable in a course of study for the information and the facts that it gives, but that it is unsuited for disciplining the mind. This claim is quite true, if facts alone are dealt out to the pupil. The subject is so vast, the facts regarding the discovery of the elements, the methods of preparing them, and their properties after they are prepared are so numerous, and this number is increased so many fold by the same classes of facts regarding the innumerable compounds of these elements, that those who compile a short treatise on chemistry find it very difficult to do otherwise than fill the work with these dry facts. The science, that is the



CHEMICAL LABORATORY, ANALYTICAL ROOM.



relations, is left out for want of space, or, what is worse, it is brought in in the form of the baldest kind of definitions and rules and laws. And yet a proper selection of chemical facts and experiments affords the means of exercising and building up the reasoning powers. It has been the aim to make this course educational in the best sense. In the laboratory practice (which has a prominent place in the work), as well as in the demonstrations at the lecture table, experiments are selected solely because of their adaptability to make the subject in hand clearer. It thus happens that many brilliant or striking experiments are discarded in favor of less complicated ones.

Eighty-one members of the class completed the term's work, and passed the study at the final examination.

A six-weeks course of lectures was given the same class in the first half of the winter term, on organic compounds. In this time it has seemed that more good can be done the student by making facts regarding the sources and properties of common commercial organic compounds the principal feature, and the science quite secondary. Enlargement of the course at this point is very desirable. The remaining six weeks of the winter term the class gave to the study of common minerals. By the study of the text and by work upon the minerals themselves, the effort is made to give students a working knowledge of minerals. Crystallography and kindred phases of the subject are necessarily passed over very lightly, as being less important to them.

The class this term consisted of seventy-seven young men and young women, seventy-four of whom passed at the end of the term.

In the spring term, this Second-year class devoted two hours per day to chemical analysis. As heretofore, the aim has been not so much to make analysts of the members of the class as to round out their work in chemistry. While such substances as ordinary salts, brines, &c., are examined and identified, attention is given not so much to following out accepted analytical formulas as to studying the chemistry of the reactions. Seventy-four students formed this class. Sixty-seven of these completed the term and made the passing grade.

During the winter term, the Third-year class took the usual course in agricultural chemistry. The text-book used with this class for several years has not been very satisfactory, although no better one has been found. It is hoped that something better can be provided for the future. Fifty-eight students passed this study at the end of the term.

In addition to these, my usual classes, I have this year taught the Fourth-year class in geology during the spring term. The class numbered twenty-six, all of whom made the required grade.

There have been three special students in chemistry; two of them continuing through the year, doing post-graduate work.

The demands on the department by citizens of the State for analyses of substances are somewhat variable in frequency. The past year has probably been about an average in this respect; although there may have been special

demand for particular kinds of work. The following plan has been adopted regarding charges for analytical work: If the work is of a public nature, *i. e.*, the results for public use and benefit or for the use of public officers, no charge is made. If the work is for the exclusive profit of the individual, a charge has been made that is rather low for the amount of work done. In many cases a preliminary examination is made without charge, and advice given which saves the full and complete analysis.

During the year there have been analyzed for cities twelve waters, some of these complete analyses as to mineral constituents, others for organic contamination only; fifteen alcoholic liquors for public officers, and four for private parties; for officials, one sample each of brine, asphalt, salt, and seeds; one mineral water and one ore for private individuals; several qualitative tests of water and minerals.

The \$1,100 asked of the last Legislature for the purchase of a special collection of minerals and stones was reduced by the Legislature, partially by clerical error, to \$700. Modification of the list of things was made to suit the money at our command. But some very desirable lines were entirely omitted. However, a very useful and somewhat showy collection was purchased of Ward & Howell, Rochester, New York, and has been placed in the cases. The minerals already on hand were worked into this set, and numbered with them, so far as they are worthy. The label placed on the specimens contains the name of the mineral, its composition, the locality where the specimen was collected, and the donor, when donated. If the money cut out by the Legislature from the \$1,100 required for the complete set can be placed at my disposal, it will greatly improve our collections.

Respectfully submitted.

G. H. FAIRYER.

COLLEGE, June 30, 1890.

DEPARTMENT OF HORTICULTURE AND ENTOMOLOGY, 1889-90.

To the Board of Regents—GENTLEMEN: I have the honor to submit for your consideration the following report upon the work of the Department of Horticulture and Entomology for the year ending June 30th, 1890.

IN THE CLASS-ROOM

my work remains practically the same from year to year, and I have only to note the satisfactory performance of their work by the students placed in my charge. The lectures in horticulture were delivered this year to a class of twenty-four young women and fifty-eight young men; the class in entomology numbered twenty-two young women and forty young men; the regular classes of young men in industrial horticulture numbered in the fall term nineteen,

in the spring term thirty-eight students. Special students were under my charge in horticulture and in entomology to the number of six.

During the winter term the class of Fourth-year students in zoölogy, assigned to me in the absence of a regular instructor in that branch, used as a text-book Orton's Comparative Zoölogy, the study of which was accompanied and supplemented, as far as possible, by laboratory work. To enlarge their opportunities for a personal acquaintance with typical forms, I secured for the use of the class a quantity of material from the Atlantic coast, consisting largely of living specimens of invertebrates, with alcoholic preparations of others, and of some vertebrates. These were in sufficient quantity to supply the entire class with material for dissection, and greatly added to the interest in the study.

ON THE GROUNDS.

Beside the work incident to the maintenance of the grounds, in the further elaboration of the original plan the most important change has been the re-locating of the farm road from its former course through the nursery and garden to a more appropriate line along the south side of the brook that forms the natural boundary of the gardens on the north. The new road was laid out closely following the line of this brook, and was put into good condition by plowing and grading. Provision has been made for entrance as contemplated in this change, but the opening remains without a gate. It will be necessary to provide a suitable gate for this, as the opening lies outside the city limits, and the grounds at that point are consequently open to the incursions of stray cattle.

The additions of the year to the regular plantations on the lawns have been somewhat less extensive than in the later years past, the most important being the planting of a considerable number of ornamental shrubs along the lines of the east and south walls, and especially in the large groups along the line of the proposed foot-path from near the southeast corner of the farm to the College building. The transfer from the nursery to the grounds of these and other permanent plantings has included about five hundred trees and shrubs, supplied largely by our own propagation.

WORK IN THE EXPERIMENT STATION.

In the orchard some important changes are in progress. In accordance with my plan, as already approved by you, for the replanting of the north orchard, the trees remaining therein, mostly in very poor condition, were removed, and the ground is at present in corn, the season's use of it having been given to the farm in return for the work of breaking the sod. I propose to replant this ground to an experimental orchard, representing varieties and methods of propagation not now on trial here.

In the vineyard the list of varieties on trial has been increased by the addition of two vines each of thirty-five catalogue sorts from various dealers, and for the most, newly introduced; and further, by the addition of twenty-

three sorts from T. V. Munson, of Denison, Texas. Of these, nine are botanical species, and the remainder are varieties originated by Mr. Munson, and generally not to be had of dealers. The collection is of the greatest interest, and as it was furnished us at a price that would not more than pay the expense of selection and packing, may properly be considered a donation. The older vines in the experimental vineyard, now three and four years old, have been provided with a temporary trellis, and are this year in fruit to the number of about seventy varieties.

A small-fruit garden for the special comparison of varieties has been laid out on the land east of the vineyard, and the planting begun by the introduction of a considerable list of gooseberries, currants, and raspberries. In addition, a plantation of the raspberry for market purposes has been made, extending on the north to the farm road. Seventy-three varieties of the strawberry were placed at the foot of the slope in the south garden, within reach of the water-main, and their irrigation has been provided for by the extension of an inch pipe, with openings at proper intervals, northward four hundred and fifty feet.

Small trees of twenty-six varieties of cherry, eleven of the plum, and five of the apple, not now represented in our collection, were purchased from the Iowa Agricultural College, and have been placed in nursery rows for the present, being too small for orchard planting. This collection, of much interest, represents, in the main, varieties not in nursery catalogues, and yet to be proven in our State. With these fruit trees came a collection of similar interest, comprising twenty-eight varieties of trees and shrubs for use and ornament. Some of these promise to develop a special value in our climate.

In the vegetable garden the work has taken direction similar to that of last year. Variety tests of the cabbage, cauliflower, and celery have been undertaken in addition, and among the potato experiments are included some trial variations in the modes of planting and culture. As the full data of these trials will be given through the publications of the Experiment Station, it seems unnecessary to give further details here.

By way of the extension of the experimental work in timber culture upon the upper farm, there were set during the fall and winter among the trees of the old plantation, 5,000 Russian mulberry, two-year plants; 500 two-year-old honey locust; 1,000 three-year-old ash; and 1,000 two-year-old catalpa. These young trees were placed thickly in and between the rows of old trees, with the view of testing their capacity to grow as profitable underbrush, to keep the ground free from weeds, and finally to become, possibly, timber for a second crop. In addition, some labor has been expended in clearing out partial and unprofitable blocks and rows, grubbing out the stumps from former clearings, and otherwise recovering what has been practically waste land. The land thus reclaimed amounts to about five acres, and this we hope to plant the coming spring.

FINANCIAL STATEMENT.

EXPENDITURES.		
Cash paid on vouchers.....		\$2,900 57
By Department transfers.....		30 30
By appropriation, vouchers for barn.....		1,000 00
Total.....		\$3,930 87
Chargeable as follows:		
Grounds.....	\$1,003 95	
Orchards and gardens.....	1,120 52	
Greenhouse.....	432 69	
Tools and repairs.....	136 39	
Museum and instruction.....	77 95	
Office assistance and supplies.....	106 37	
Team.....	53 00	
Barn.....	1,000 00	
RECEIPTS.		
Cash paid to treasurer.....		\$1,235 61
Increase in inventory.....		1,133 20
By Department transfers.....		20 20
By balance, expense of maintaining the Department, permanent improvements not inventoried, etc.....		1,541 86
Total.....		\$3,930 87

Respectfully submitted.
COLLEGE, June 30, 1890.

E. A. POPENOE,
Superintendent.

BOTANICAL DEPARTMENT, 1889-90.

To the Board of Regents—GENTLEMEN: The work of this department has been similar to that of the preceding year, with the addition of a large class in physiology in the fall term. The branches taught and the number of students in each, are shown in the following tabulation:

Elementary botany.....	167	Industrials.....	2
Structural botany.....	26	Physiology.....	59

The students in elementary botany were taught in four sections, reciting one hour daily, one section in the fall and three in the spring.

The miscellaneous duties incident to college work and study, as attending various associations, lecturing, and writing, have been performed as in previous years.

The additions to the Kansas herbarium numbered 374 specimens. These have been mounted and catalogued with the remainder of the herbarium, which now numbers 2,134 specimens. The importance of this herbarium, as an adjunct in teaching, is such as to warrant considerable expenditure in time and money for its increase. At present the additions are only through meager contributions from various persons, and small collections that I am able to make from time to time.

A large portion of my time and energies has been given to the work of the Experiment Station. Extensive experiments have been carried on with fungicides for smut of oats. Also the work of cross-fertilization of corn, begun

the previous year, was repeated and considerably extended. Much credit is due Mr. W. T. Swingle, to whose excellent assistance can be attributed in large measure the satisfactory results obtained. The work here referred to and the results in detail have been published in the Second Annual Report of the Experiment Station, for the year 1889.

The expenses of the department for the year are as follows:

Class supplies.....	\$10 75
Apparatus.....	7 00
Student labor.....	35 20
Freight, expressage, etc.....	3 50
Department bills—Mechanical.....	43 33
Printing.....	17 76
Chemical.....	1 20
Executive.....	4 08
Library.....	1 00
Total.....	\$123 82

Respectfully submitted.

W. A. KELLERMAN,

COLLEGE, June 30, 1889.

Professor of Botany.

DEPARTMENT OF MATHEMATICS, 1889–90.

To the Board of Regents—GENTLEMEN: I take pleasure in submitting the following report of my department for the school year ending June 30, 1890.

The following summary will show the class-room work done by me during the year:

<i>Studies.</i>	<i>Young men.</i>	<i>Young women.</i>	<i>Total.</i>
FALL TERM.			
Trigonometry and surveying, third year (two divisions).....	38	20	58
Algebra, second year (two divisions).....	37	19	56
WINTER TERM.			
Plane Geometry, second year (two divisions).....	44	22	66
Arithmetic, first year, B Class.....	35	15	50
Bookkeeping, first year.....	31	15	46
Algebra, first year.....	16	11	27
SPRING TERM.			
Solid Geometry, second year (two divisions, five weeks).....	47	15	62
Algebra, first year (three divisions).....	71	49	120
Total enrollment for the year.....	319	166	485

The total number of different students represented in the above classes was 322. The First- and Third-year classes show a marked increase in numbers over the previous year. The above table shows four hours daily of teaching for the fall and spring terms, and five hours for the winter term. During the fall term, the fifth hour was devoted entirely to the practice work of the Third-year class in surveying. So large was this class that it became neces-

sary to divide it into nine divisions, in order that each student might get two hours per week of practice. Mr. Mills, a post-graduate student, rendered valuable assistance in directing the class. A greater range of work than usual was possible, because of the increased equipment in the department. Practice with compass, transit, plane table, level, etc., was taken up; and platting formed a more prominent part of the work than in previous years.

In the afternoons, as the various divisions had opportunity, complete surveys of the College farm, or a portion of it, were made, and notes collected from which were completed, during the winter term, the large topographical maps. One division of the class continued their surveying beyond the term, and ran all the necessary lines of levels to show the contour of the entire main farm. On the whole, a considerable increase both in interest and in practical results can be reported for this class.

In the other classes the course was much the same as in recent years. Want of time to extend the work in algebra and geometry beyond the mere requirements of the course of study is our chief difficulty.

Aside from the work of instruction, my time was devoted to the usual duties of a member of the Faculty. As Librarian, the report of that department will show what was accomplished. In the Faculty, I was Chairman of the Library Committee, and a member of the Committee on Grades, and on Catalogues. I attended one farmers' institute, lectured before the students, and as usual, wrote for the *Industrialist*.

The State appropriation of \$500 for the purchase of instruments for the surveying, was expended in the purchase of a railroad transit with solar attachment, an improved plane table, a drainage level, and smaller pieces of apparatus that were much needed. With the increase of the number of Third-year students, a further purchase of instruments becomes necessary. At least two of the old transits are worn out, and a new Y level is badly needed.

Respectfully submitted.

D. E. LANTZ,

COLLEGE, June 30, 1890.

Professor of Mathematics.

THE LIBRARY, 1889-90.

To the Board of Regents—GENTLEMEN: I take pleasure in submitting the Librarian's report for the year ending June 30, 1890.

I am glad to report a considerable growth of the various departments of literature represented in our library. When it is remembered that the majority of the books purchased are of a technical character, high in price, and subject to very small discounts, the appropriation made by the State seems entirely inadequate for our needs. The \$1,000 appropriated for last year was expended with great care. Among the second-hand books purchased during the year are: London Quarterly Review, 115 vols., half calf, at \$25; Van

Nostrand's Engineering Magazine, 33 vols., half morocco, at \$35; Eclectic Magazine, first series, 40 vols., half morocco, at \$16; American Journal of Science and Art, 76 vols., at \$133. Opportunities to buy valuable sets of periodicals at small cost are occurring almost daily; but because of lack of available funds we are usually compelled to forego their purchase.

The library now numbers 9,749 bound volumes, an increase during the year of 892 volumes. There are also 349 duplicate volumes not entered on the accession list, and 3,126 pamphlets. Total, 13,224 volumes.

The increase in bound volumes is from the following sources: By purchase, 499; by donation, 126; by binding periodicals, 170; from the Secretary of the Interior, on deposit, 97.

The use of the library by students for original investigations has largely increased during the year. The character and number of the volumes drawn from the library for home use is indicated pretty accurately by the following table:

Bound magazines.....	1,236	Psychology.....	147
History.....	777	Political science.....	226
Biography.....	289	Agriculture.....	215
Travels.....	164	Horticulture.....	112
Fiction.....	1,439	Botany.....	62
Poetry.....	294	Zoology.....	120
English literature and language.....	545	Chemistry.....	52
Essays.....	581	Physics.....	140
Religious.....	84	Mechanics and engineering.....	149
Education.....	139	Physiology.....	189
Art.....	75	Geology.....	29
Reading and elocution.....	250	Military science.....	47
Juveniles.....	117	Household economy.....	63
Unclassified.....	50	Mathematics.....	90
		General science.....	217
Total.....	6,040	Total scientific.....	1,858
		Grand total.....	7,898

No record of the constant use of the books while in the library is kept; nor is there any of the extent to which special students use the volumes which are kept permanently in the various departments. It is certain, however, that there is a constant demand for them, and that they form a valuable part of the apparatus for instruction.

The great need of our College at this stage of its growth is the enlargement of its library facilities. In every way we have outgrown our present surroundings. The room at present devoted to library purposes is 28x30 feet in floor area. To this is attached an ante-room 15x28 feet, which is used for the purpose of a reading-room. In these two rooms there is shelving for about nine thousand volumes; but in order to get room for so many, the top shelves are placed about twelve feet from the floor. This makes it very inconvenient to get access to a portion of the books. All the available space for shelving is now utilized, so that there can be no further growth by mere increase of shelf-room. We have now over ten thousand volumes for which space is provided. More than eight thousand are in the library proper, about a thousand are stored in a small room on the second floor of the same building, while

several hundred are kept permanently for reference in the various College departments. Because of lack of room in the departments many of these books have been returned to the main library, and the Librarian is often puzzled to find room for the storage of books that already belong to the library. And yet we cannot afford to stop the buying of books. In an institution whose primary object is the teaching of science, the demand for modern books of reference was never greater than it is to-day. Instead of a thousand dollars a year, the library should have five times as much annually for a series of years. We must have double the amount we are now expending, or we cannot meet the increasing demands of the State for technical education. While the sum now used is totally insufficient to keep up with the advancement made in science alone, it must be remembered that in such departments as those of History and English Literature books constitute almost the only apparatus which the teachers can use for illustration. The library becomes the laboratory for the student; and ours still has large deficiencies in these two branches of literature.

It is probable that the Morrill bill now before the national Congress will soon become a law. In that case the State appropriation of \$1,000 for the year ending June 30, 1891, may possibly be supplemented by further expenditure of a sum sufficient to relieve the immediate necessities of the departments in the matter of books of reference. But a more serious problem is then left before us, in that there is not sufficient room to properly place the additional books likely to be added to the library during the coming year.

Aside from room for the storage of books, our most serious need is a comfortable reading-room, properly furnished for its purpose. This means much more than standing room for a score of students around a reading-desk, and the dozen chairs which we now possess. It means comfortable seats, and suitable tables upon which to place the books of reference when in use. It means room for all who may desire to study or read. With an enrollment of five hundred students, we have far outgrown the crude appointments of the present, and there is no escape from the consideration of the question of what is now expedient.

Our only recourse it seems to me, is to ask from the Legislature means for the erection of a new library building. The room now in use was designed for a class-room, and it is needed for that purpose. The new building should be carefully planned with reference to library uses. It should be simple in design, and yet beautiful from the architect's standpoint. It should be fire-proof, and entirely separate from the buildings used for other college purposes. It should be large enough to provide for the proper future growth of the library. To properly secure all these features would require the expenditure of a considerable amount of money, but all would be in the line of true economy. The State cannot afford to build up a library from year to year, and leave it subject to the danger of destruction by fire, or unserviceable because of lack of facilities for its proper use.

The following statement will show the expenditures for the past year, with their relations to the inventory of June 30, 1889:

Inventory, June 30, 1889:			
Books and pamphlets.....	\$14,307 99		
Furniture.....	538 73		
Catalogue and cards.....	1,925 69		
Other items.....	154 95		
			\$16,927 36
Losses:			
Books (stolen).....			3 80
Balance.....			\$16,923 56
Increase for the year:			
Value of books bought.....	\$918 70		
Value of magazines bound.....	570 25		
Value of books donated.....	275 00		
Catalogue (labor).....	17 12		
Furniture.....	10 00		
			1,791 07
Inventory, June 30, 1890.....			\$18,714 63
Expenditures:			
Cash—State appropriation—For books.....	\$831 30		
For magazines.....	168 70		
Current funds—For books.....	28 25		
Pay-roll.....	434 33		
Freight and express.....	31 27		
Supplies.....	8 25		
			\$1,502 10
Department bills:			
Executive—Drayage.....	\$6 15		
Postage.....	3 00		
Printing.....	9 30		
Mechanical—Furniture.....	10 00		
Repairs.....	60		
			29 05
Total expenses.....			\$1,531 15
Credits:			
Department bills.....	\$2 70		
Inventory increase.....	1,787 27		
			1,789 97
Balance.....			\$258 82

Appended to this report will be found a list of donations received by the library during the year, and also a list of the periodicals on file in the reading room and library.

Respectfully submitted.

D. E. LANTZ, *Librarian*.

DONATIONS, 1889-90.

The following are the principal donations to the library received during the year ending June 30th, 1890:

From *Hon. John A. Anderson*, Washington, D. C.: Official Records, War of the Rebellion, Vol. 24, pts. I, II, and III, Vol. 25, pts. I and II, Vol. 26, pts. I, II, and III. R. R. Statistics of the U. S., 1888. U. S. Army Regulations, 1889. Report of the Secretary of the Treasury, 1889, 2 vols. Report of the U. S. Commissioner of Labor, 1888; Same, 1889. Report of the U. S. Commissioner of Navigation, 1889; Same, 1889. Third Report of the Interstate Commerce Commission. Coast Survey, 1887.

From *Ira K. Alderman*, Hannibal, Mo.: Standard Poland-China Swine Record, Vol. 1.

From Prof. F. W. Cragin, Washburn College, Topeka, Kas.: Natural History Bulletins, Vol. 1, also numbers of Vol. 2.

From L. M. Crowthers, Canonsburg, Pa.: Improved Black Top Merino Record, Vol. 1.

From the Author, Edw. N. Dickerson, Princeton College, N. J.: Joseph Henry and the Magnetic Telegraph.

From President G. T. Fairchild, Manhattan, Kas.: Proceedings and Addresses of the National Educational Association, 1889. Proceedings of the National Council of Education.

From Wm. George's Sons, Bristol, England: The New World Book List.

From Sec. I. D. Graham, Manhattan, Kas.: Memorial Addresses on Gen. John A. Logan.

From the Author, Joshua Hill, Cincinnati, Ohio: Thought and Thrift.

From Prof. R. C. Kedzie, Lansing, Michigan: Qualitative Chemical Analysis.

From Prof. D. E. Lantz, Manhattan, Kas.: Missouri School Report for 1888. Missouri University Library Catalogue. Our Continent, Vol. 1, unbound. The Field, London (6 mo.), 1877.

From Hon. Adolph Leue, Cincinnati, Ohio: Ohio State Forestry Report, Vol. 3.

From Capt. Wm. Mitchell, Wabaunsee, Kas.: The Complete Grazier.

From L. P. Muir: N. A. Galloway Herd Book, Vols. 1 to 4.

From Lieut. J. F. Morrison, Manhattan, Kas.: Chute's Practical Physics. Wilhelm's Military Dictionary. American Kriegspiel, 2 vols. Strategos, 2 vols. Laws of Kansas Relating to the National Guard. Fifth and Sixth Reports of the Adj. General of Kansas.

From Prof. E. A. Popenoe, Manhattan, Kas.: Transactions of the Kansas Academy of Science, Vols. 9 and 11. Transactions of Minn. Hort. Society, Vol. 5. Third Biennial Report of the California Board of Horticulture.

From Prof. E. M. Shelton, Manhattan, Kas.: Agriculture of Ontario, 1888. Agricultural Science, Vol. 1, 8 numbers.

From Thompson, Brown & Co., Boston, Mass.: Meservey's N. Book-keeping. Academic Algebra.

From John Wheldon, London, England: Botanical Catalogue, with Supplements.

From the U. S. Department of Agriculture, Washington, D. C.: Album of Agricultural Statistics. Report of the Secretary of Agriculture, 1889. Grasses and Forage Plants, Vasey. Insect Life. Bulletins of the Various Divisions as Issued.

From the Secretary of the Smithsonian Institution, Washington, D. C.: Smithsonian Report, 1886, 2 vols.; 1887, 2 vols. Proceedings of the U. S. National Museum, Vols. 10 and 11. Bulletins of the U. S. National Museum, Nos. 33, 34, 35, 36, and 37.

From the U. S. Commissioner of Patents, Washington, D. C.: Patent Office Gazette as issued.

From the U. S. Commissioner of Education, Washington, D. C.: Annual Report, 1887-88. History of Education in South Carolina, Georgia, Florida, Wisconsin. Federal Aid to Higher Education.

From the American Humane Society, Boston, Mass.: "Black Beauty," by Anna Sewell.

From J. O. Young, Washington, Kas.: Northwestern Poland-China Swine Record, three volumes.

From Chief of Ordnance, War Department, Washington D. C.: Ordnance Report, 1889.

From the Secretary of the Interior, Washington, D. C.: Ninety-seven volumes Public Documents, leather binding.

From the U. S. Department of State, Washington, D. C.: Consular Reports, as is-

sued. Trade between the United States and the Spanish American Colonies, Curtis. Official Catalogue of the U. S. exhibit at the Paris Exhibition, 1889.

From the Chief of Engineers, U. S. Army, Washington, D. C.: Report of the U. S. Engineers for 1889, four volumes. Index to Reports of the U. S. Engineers.

From the State Officials of Kansas: Report of Railroad Commissioners for 1889. School Laws of Kansas for 1889. Report of the State Bureau of Labor for 1889.

From Officials of Other States: Michigan State Board of Health, 1889. Michigan Sanitary Conventions, 1889. Michigan Horticultural Society, 1888. Horticulture of Minnesota, Vol. 17. Wisconsin Farmers' Institutes, 1889.

From Officers of Experiment Stations: New York, Sixth Annual Report. Wisconsin, Sixth Annual Report. Cornell Agricultural Experiment Station Report for 1889. Ohio Agricultural Experiment Station Report for 1889. Maine Agricultural Experiment Station Report, 1888. Vermont Report, 1 and 2. Kansas, First Annual Report. Numerous unbound Annual Reports and Bulletins.

The following periodicals have been on file in the library and reading-room during the past year:

I. PURCHASED FROM STATE APPROPRIATIONS.

1. MONTHLY.

Agricultural Science.	Forum.
American Agriculturist.	Harper's Monthly.
American Chemical Journal.	Household.
American Art Printer.	Inland Architect.
American Garden.	Inland Printer.
American Journal of Science and Arts.	Journal of the Chemical Society.
American Meteorological Journal.	Journal of Comparative Medicine.
American Naturalist.	Library Journal.
Art Journal.	Magazine of American History.
Artist Printer.	North American Review.
Atlantic Monthly.	Paper and Press.
Botanical Gazette.	Popular Gardening.
Canadian Entomologist.	Popular Science Monthly.
Carpentry and Building.	Psyche.
Century Magazine.	Railroad and Engineering Journal.
Eclectic Magazine.	Scribner's Monthly.
Education.	Superior Printer.
Entomologica Americana.	Table Talk.

2. WEEKLY.

American Architect (Imperial Edition).	Harper's Weekly.
Chemical News.	London Live-Stock Journal.
Country Gentleman.	Nation.
Critic.	Nature.
Electrical Review.	Rural New-Yorker.
Garden.	Science.
Garden and Forest.	Scientific American.
Gardener's Chronicle.	Scientific American Supplement.

3. SEMI-MONTHLY.

Literary World.	Good Housekeeping.
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4. BI-MONTHLY.

Journal of the Military Service Institution.

5. QUARTERLY, ETC.

American Journal of Mathematics.	Annals of Botany.
Auk.	Studies from the Biological Laboratory.
Edinburgh Review.	

II. PURCHASED FROM CURRENT FUNDS.

Butterick's Delineator.	The Season.
Harper's Bazar.	

III. DONATED TO THE LIBRARY.

Advance, Chicago, Ill.
 American Sentinel, New York.
 Breeder's Gazette, Chicago.
 Christian Arbitrator and Peace Record.
 Colorado Farmer, Denver, Col.
 Industrialist, Manhattan.
 Junction City Union.
 Kansas Agriculturist, Wamego.

Kansas Farmer, Topeka.
 Louisiana Planter (from Prof. Shelton).
 Kansas City Daily Gazette, Kansas City, Kas.
 Kansas City Live-Stock Indicator.
 McPherson Democrat.
 Presbyterian.
 Union Signal, Chicago, Ill.
 Western Agriculturist, Quincy, Ill.

IV. INDUSTRIALIST AND EXPERIMENT STATION EXCHANGES.

1. FROM KANSAS.

Allen County—Humboldt Union, Moran Herald, Iola Courant.
Anderson County—Westphalia Times.
Atchison County—Atchison Champion, Atchison Times.
Barber County—Barber County Index, Medicine Lodge; Kiowa Herald, Hazelton Express.
Barton County—Great Bend Register, Hoisington Dispatch.
Brown County—Fairview Enterprise.
Butler County—Augusta Journal, Douglass Tribune, El Dorado Republican, White Water Tribune, Walnut Valley Times.
Chase County—Chase County Republican, Strong City; Chase County Courant, Cottonwood Falls.
Chautauqua County—Cedar Vale Commercial, Sedan Times-Journal, Sedan Graphic.
Cherokee County—Baxter Springs News, Western Friend, Varck.
Clark County—Clark County Clipper, Ashland; Ashland Weekly Journal.
Clay County—Clay Center Times, Clay Center Dispatch, Wakefield Advertiser.
Cloud County—Clyde Argus, Clyde Herald, Concordia Empire, Kansas Blade, Concordia; Glasco Sun, The Kansan, Jamestown.
Coffey County—Burlington Republican and Patriot, Burlington Nonpareil, Le Roy Reporter, Gridley Standard.
Cowley County—Weekly Republican-Traveler, Arkansas City; Winfield Courier.
Comanche County—Coldwater Enterprise.
Crawford County—Girard Herald, Girard Press.
Decatur County—Eye, Oberlin; Oberlin Herald, Norcatur Register.
Dickinson County—Ablene Weekly Chronicle, Abilene Weekly Reflector, Solomon Sentinel, Solomon City; Kansas Miller and Manufacturer, Enterprise.
Douglas County—Baker Beacon, Baldwin; Baker University Index, Baldwin; Lawrence Journal and Tribune, Weekly University Courier, Lawrence; University Kansan, Lawrence; University Review; Lawrence; College Echoes, Leocompton.
Edwards County—Weekly Banner-Graphic, Kinsley.
Elk County—Howard Courant, Howard Democrat, Longton Times, Moline Mercury, South Kansas Farmer, Moline.
Ellis County—Ellis Headlight, Hays City Sentinel.
Ellsworth County—Ellsworth Democrat, Kanopolis Kansan, Wilson Echo.
Finnay County—Garden City Herald, Garden City Imprint.
Ford County—Speareville Blade.
Franklin County—Lane Leader, Ottawa Herald, Ottawa Journal and Triumph, Ottawa Lever.
Garfield County—Garfield County Call, Eminence; Ravanna Chieftain.
Geary County—Junction City Republican, Junction City Tribune, Junction City Union.
Gove County—Grainfield Cap Sheaf.
Graham County—Bogue Signal.
Grant County—Ulysses Tribune and Grant County Register.
Gray County—New West Echo, Cimarron.
Greenwood County—Fall River Times, Madison News, Severy Record.
Harper County—Anthony Republican, Bluff City Herald, Harper Sentinel.
Harvey County—Burrton Graphic, Halstead Independent, Kansas Commoner, Newton; Newton Weekly Journal.
Haskell County—Ivanhoe Times.
Jackson County—Holton Weekly Recorder, Holton Weekly Signal, Rural Advocate, Circleville; Whiting Weekly News.
Jefferson County—Valley Falls New Era, Valley Falls Republican, Winchester Herald.
Jewell County—Burr Oak Herald, Jewell County Republican, Jewell City; Jewell County Monitor, Jewell City; Randall Beacon, Salem Argus.
Johnson County—Kansas Patron, Olathe; Kansas Star, Olathe; Spring Hill New Era.
Kearny County—Lakin Index, Lakin Pioneer-Democrat.

Kingman County—Cunningham Herald.

Labette County—Chetopa Advance, Labette County Democrat, Mound Valley Herald, Oswego Independent, Wilsonton Journal.

Leavenworth County—Leavenworth Daily Standard, Orphan's Friend, Leavenworth.

Lincoln County—Lincoln County Democrat, Lincoln Beacon, Sylvan Grove Sentinel.

Linn County—Pleasanton Herald.

Lyon County—Allen Tidings, College Life, Emporia; Hartford Call, Hartford News, Normal Quarterly, Emporia.

McPherson County—Democrat, McPherson; Educator and Companion, McPherson; Galva Times, Lindsborg News, McPherson Anzeiger, McPherson Republican, Marquette Tribune.

Marion County—Hillsboro Herald (German), Peabody Gazette, Rural Kansan, Marion; School Gleaner, Marion.

Marshall County—Axtell Anchor, Blue Rapids Times, Marshall County Democrat, Marysville; Marshall County News, Marysville; True Republican, Marysville; Frankfort Sentinel, Marysville Post. Waterville Telegraph.

Meade County—Meade Republican, Meade Center; Meade County Globe, Meade Center.

Mitchell County—Public Record, Cawker City; Tri-County News, Scottsville.

Montgomery County—Cherryvale Champion, Republican, Cherryvale; South Kansas Tribune, Independence.

Morris County—Council Grove Republican.

Neosho County—Headlight, Thayer.

Ness County—Ness County News, Ness City.

Norton County—Champion, Norton; Edmond Times, Norton Courier, Weekly New Era, Norton.

Osage County—Carbondalian, Carbondale; Kansas People, Osage City; Melvern Record, Osage County News, Osage County Republican, Quenemo.

Osborne County—Downs Times, Osborne County Farmer, Osborne City; Osborne County News, Osborne City.

Ottawa County—Delphos Republican, Minneapolis Messenger, Solomon Valley Democrat, Minneapolis.

Phillips County—Logan Republican, Phillips County Inter-Ocean.

Pottawatomie County—Olsburg News-Letter, Westmoreland Indicator.

Rawlins County—Republican Citizen, Atwood.

Reno County—Hutchinson Weekly News, Nickerson Argosy.

Republic County—Belleville Democrat, Cortland Register, Republic County Press, Belleville.

Rice County—Bulletin, Sterling; Chase Record, Lyons Democrat, Sterling Gazette.

Riley County—Daily Republic, Manhattan; Mercury, Manhattan; Nationalist, Manhattan; Kansas Presbyter, Manhattan; Kansas Telephone, Manhattan; Manhattan District Methodist, Leonardville Monitor, Riley Regent.

Rooks County—Rooks County Record, Stockton; Western News, Stockton.

Rush County—La Crosse Clarion.

Russell County—Russell Journal, Russell Record, Russell County Republican, School Signal, Bunker Hill.

Saline County—Gypsum Valley Echo, Gypsum City; Assaria Argus, Saline County Journal, Salina; Salina Herald, Salina Sun, Salina Republican, Weekly Tidings, Salina; Kansas Wesleyan Advocate, Wesleyan Lance, Western Odd Fellow, Salina.

Sedgewick County—Colwich Courier, Weekly Mt. Hope Monitor, Wichita Eagle, Wichita Republic, Western Methodist.

Seward County—Liberal Leader.

Shawnee County—Association Reflector, Topeka; Weekly Capital, Topeka; Kansas Farmer, Topeka; Kansas Newspaper Union, Topeka; Western School Journal, Topeka; Spirit of Kansas, Topeka; Western Poultry Breeder, Topeka; Topeka Mail, Western Baptist, Topeka; Kansas Financier, Topeka; Washburn Argo, Topeka; Rossville Times.

Sheridan County—Selden Times.

Sherman County—Goodland News, Goodland Republican.

Smith County—Gaylord Herald, Cedarville Globe.

Sumner County—Caldwell Journal, Sumner County Standard, Mocking Bird, Oxford; Mulvane Record.

Wabaunsee County—Alma Enterprise, Eskridge Star, Wabaunsee County News, Alma.

Wallace County—Sharon Springs Leader, Weskansan, Weskan.

Washington County—Barnes Enterprise, Clifton Review, Hanover Democrat, Washington Register, Washington Republican, Washington Post.

Wichita County—Leoti Standard.

Wilson County—Fredonia Democrat, Wilson County Citizen.

Wyandotte County—Chronicle, Kansas City; Kansas Catholic, Kansas City; Weekly Press, Armourdale.

2. FROM OTHER STATES.

- Agricultural Epitomist, Indianapolis, Ind.
 American Agriculturist, N. Y.
 American Breeder, De Kalb, Ill.
 American Farm and Horticulturist, Lakewood, O.
 American Farmer, Baltimore.
 American School, Streator, Ill.
 American Sheep Breeder, Chicago.
 American Swineherd, Alexandria, S. D.
 Argo, The, New Brunswick, N. J.
 Baltimore Weekly Sun.
 Border's Odd Fellow, Kansas City.
 Breeder's Gazette, Chicago.
 Bulletin, The, Agr. Dept., Raleigh, N. C.
 Cadet, The, Orono, Me.
 Chaddock, The, Quincy, Ill.
 Civil Service Record, Boston.
 College Journal, Spokane Falls, Washington.
 Colman's Rural World, St. Louis.
 Colorado Farmer, Denver.
 Cultivator and Country Gentleman, Albany, N. Y.
 Dairy Column, Chicago.
 Dairy World, Chicago.
 Delaware Farm and Home.
 Dress, New York.
 Educational Notes, New York.
 Equity, Chicago.
 Farm and Fireside, Philadelphia.
 Farm and Home, Springfield, Ohio.
 Farm, Field, and Stockman, Chicago.
 Farm Journal, Philadelphia.
 Farmer's Home, Dayton, Ohio.
 Farmer's Review, Chicago.
 Farmer's Club Journal, Hornellsville, New York.
 Farm, Stock, and Home, Minneapolis, Minn.
 Fruit and Grape-Grower, Charlottesville, Va.
 Green Leaf Monthly, Lampasas, Texas.
 Handicraft, Honolulu, H. I.
 Hesperian, Lincoln, Neb.
 Hoard's Dairyman, Atkinson, Wis.
 Hoisington Bank Reporter, Kansas City, Mo.
 Holstein-Friesian Register, Brattleboro, Vt.
 Horticultural Art Journal, Rochester, N. Y.
 Husbandman, Elmira, New York.
 Independent, New York.
 Jersey Bulletin, Indianapolis, Ind.
 Kansas City Commercial.
 Kansas City Implement and Farm Journal.
 Kansas City Live-Stock Indicator.
 Kentucky University Tablet.
 Ladies' Home Companion.
 Mail and Express, New York.
 Maritime Agriculturist, Dorchester, N. B.
 Maryland Farmer and New Home.
 Microcosm, New York.
 Monthly Bulletin (sanitary), Providence, R. I.
 Monthly Report Agricultural Department of South Carolina.
 New England Farmer.
 New York Observer.
 New York Weekly Tribune.
 Orange Judd Farmer, Chicago.
 Orchard and Garden, Little Silver, N. J.
 Our Dumb Animals, Boston.
 Our Young Folks' Monthly, Chicago.
 Outlook and Sabbath Quarterly.
 Portfolio, The, Boulder, Col.
 Practical Farmer, Philadelphia.
 Prairie Farmer, Chicago.
 Press, Weekly, Philadelphia.
 Rural Home, Philadelphia.
 Sanitary Volunteer, Concord, N. H.
 Saint Louis Grocer.
 School and Home, St. Louis.
 Scientific American.
 Southern Cultivator and Dixie Farmer, Atlanta, Ga.
 Southern Live-Stock Journal, Starkville, Miss.
 Southern Workman and Hampton School Record.
 Southwestern Journal of Education, Nashville, Tenn.
 Speculum, Lansing, Mich.
 Statesman, Chicago, Ill.
 Tariff League Bulletin.
 Teacher, The, New York.
 Travelers Record, Hartford, Conn.
 Valley Spirit, Chambersburg, Pa.
 Voice, New York.
 Western Agriculturist, Quincy, Ill.
 Western Farmer, Sioux City, Ia.
 Western Plowman, Moline, Ill.
 Western Resources, Lincoln, Neb.
 Western Rural, Chicago, Ill.
 Western Swineherd, Geneseo, Ill.
 Woman's Work, Athens, Ga.

DEPARTMENT OF INDUSTRIAL ART AND DESIGNING, 1889-90.

To the Board of Regents—GENTLEMEN: I have the honor to submit the following report of the work and condition of the Department of Industrial Art and Designing for the year ending June 30, 1890.

During the fall term I instructed the First-year class in geometrical drawing; during the winter term I gave instruction to the same class in freehand

designing, and to the Third-year class in topographical drawing; and during the spring term I taught the Second-year class in orthographical and isometrical projection, and the Third-year class in linear perspective. For a detailed description of the aim and methods of this work, I refer you to former reports and to the annual catalogue. I also remind you of the exhibition at Commencement of the finished work of the different classes and special students.

In addition to these regular classes, I have also given daily instruction to a number of special students and post-graduates. The following schedule will show the number of students in each of these different classes.

TERM.	FREEHAND.		MECHANICAL.				Topographical.....	Post-graduates	Industrial	Total.....
	Primary.....	Advanced.....	First year...	Second year..	Third year...	Special				
Fall.....	21	19	184	.....	.....	7	.....	2	1	234
Winter.....	162	15	29	.....	.....	6	52	2	1	267
Spring.....	7	20	11	60	52	11	.....	2	1	164
Totals.....	190	54	224	60	52	24	52	6	3	665

The winter-term class in primary freehand met but three times a week; the spring-term class in mechanical drawing of the second year met daily for five weeks; the spring-term class in mechanical drawing of the third year met but twice a week; and the class in topographical drawing met at appointed hours on afternoons and Saturdays. All other classes met daily.

Of work outside the class-room, but directly or indirectly in the interest of the College, I will mention the preparation of the plans and specifications and the superintendence of the building of the new horticultural barn; my attendance during the summer of 1889 at the National Educational Association, at Nashville, Tennessee, where I read a paper on Manual Training before the Industrial Section; my attendance at the Farmers' Institute at Girard; an evening lecture before the Riley county teachers, at Riley; a serial lecture before the Teachers' Institute, at Atchison; and an evening lecture before the teachers of Neosho county, at Council Grove. At the two latter places I spoke of the "History of the Development of Industrial Education." I also prepared a weekly column of educational news for the *Industrialist*, and took an active part in the work of the Manhattan Horticultural Society, the Scientific Club of the College, and the College orchestra.

The Department of Industrial Art is in good working order, and, thanks to the legislative appropriation of \$600, received for this purpose last year, is now fairly well equipped with furniture, tools and studies. The main purchases made from the appropriation were a set of forty-six students' desks and one teachers' desk, two large cabinets with seventy drawers each, two large plaster-of-paris statues, several smaller plaster casts, and five different series of studies in mechanical and advanced freehand drawing. For a detailed

statement of all expenditures I refer you to the records of the Secretary and the Treasurer.

The most urgent need of the Department is at present a collection of architectural models, many of which might be made by the Mechanical Department, and of decorative and structural building materials. I also draw your attention to the crowded condition of the department. A further increase of students seems an impossibility without a liberal assignment of more room and a corresponding increase of the teaching force.

Respectfully submitted.

J. D. WALTERS,

COLLEGE, June 30, 1890.

Professor of Industrial Art and Designing.

TELEGRAPH DEPARTMENT, 1889-90.

To the Board of Regents—GENTLEMEN: Herewith is submitted my eleventh annual report, for the year ending June 30, 1890.

The work under my charge has been very much the same as heretofore. The enrollment in book-keeping classes is as follows:

	Ladies.	Gentlemen.	Total.
Fall term (one division).....	10	21	31
Winter term (two divisions).....	43	54	97
Spring term (one division).....	5	18	23
Totals.....	58	93	151

The work of these classes has in a general way been very satisfactory.

In the Telegraph Department there were enrolled 78 students, 13 ladies and 65 gentlemen.

Continuing the table of attendance in this department as shown in my last report, we have the following:

	Ladies.	Gentlemen.	Total.
1879-80.....	18	41	59
1880-81.....	29	46	75
1881-82.....	24	54	78
1882-83.....	26	56	82
1883-84.....	18	49	67
1884-85.....	8	42	50
1885-86.....	6	48	54
1886-87.....	7	54	61
1887-88.....	7	60	67
1888-89.....	7	41	48
1889-90.....	13	65	78
Totals.....	163	556	719

The receipts and expenditures of the year are here given:

DEBITS.		
Students' labor.....	\$88 19	
Freight and drayage.....	12 09	
Nails, screws, nails, etc.....	4 39	
Battery materials.....	24 60	
Repairing telephone.....	1 32	
Telephone rental.....	40 00	
Refunded fees.....	4 00	
Electric bell.....	2 75	
Tools.....	1 25	\$178 59
Inventory decrease.....	\$106 76	
Department bills.....	3 90	110 66
CREDITS.		
Cash received as fees.....	\$267 95	\$289 25
Department bills.....	25	268 20
Balance.....		\$21 05

The following table will show receipts and expenditures for the last eleven years, during which the department has been in my charge:

Years.	Expenditures..	Receipts*.....	Balances.....	Inventory.....
1879-80.....	\$117 87	\$123 50	\$5 63	\$257 25
1880-81.....	325 24	200 24	125 00	382 25
1881-82.....	330 07	291 45	38 62	643 50
1882-83.....	277 04	311 75	34 71	691 85
1883-84.....	507 38	248 52	258 86	894 67
1884-85.....	299 85	192 75	107 10	889 50
1885-86.....	283 47	286 80	2 33	974 85
1886-87.....	236 46	223 25	13 21	950 19
1887-88.....	349 90	360 31	10 41	925 54
1888-89.....	221 02	184 50	36 52	918 86
1889-90.....	178 59	267 95	.....	812 10

* Increase or decrease of inventory is not included here.

During the year past I have enjoyed the assistance of Miss Bertha Bacheller in the work of teaching in this department, in accordance with the action of the Board of Regents.

As Assistant Secretary of the Board of Regents, my work has already become familiar to you through your constant examination of the accounts. My other work has remained much the same as before.

The various committees of the Faculty to which I have been appointed have received their share of attention. The editorial work of the *Industrialist* and the participation in farmers' institutes have each claimed a part of my time; while attendance upon the Kansas Academy of Science and the Kansas State Dairy Association, of both of which I have the honor to be Treasurer, together with several lectures delivered before teachers' associations, have added a pleasant variety to the work of the year.

On January 1st, I was appointed Secretary of the Experiment Station, with special charge of the correspondence and the publication and distribution

of the reports. This has added materially to the work of this office, and suggests that it may sometime be deemed wise to find further assistance in the teaching of classes in book-keeping.

Respectfully submitted.

I. D. GRAHAM,

*Ass't Sec'y of Board, Sec'y of Faculty, Instructor in Bookkeeping and Commercial Law,
Sup't of Telegraphy, and Sec'y Experiment Station.*

COLLEGE, June 30, 1890.

DEPARTMENT OF ENGLISH LANGUAGE AND LITERATURE, 1889-90.

To the Board of Regents—GENTLEMEN: I have the honor to present the following report of my work for the past year in the Department of English.

The enrollment and distribution of students in classes is shown in the table below:

<i>Classes.</i>	<i>Gentlemen.</i>	<i>Ladies.</i>	<i>Totals.</i>
FALL TERM.			
English Analysis, first year (four classes).....	143	82	225
Rhetoricals, fourth year.....	19	6	25
WINTER TERM.			
English Structure, first year, (three classes).....	109	81	190
Rhetoric, third year.....	35	22	57
Rhetoricals, fourth year.....	19	6	25
SPRING TERM.			
English Composition, first year, (three classes).....	90	64	154
English Literature, third year.....	35	22	57
Rhetoricals, fourth year.....	19	6	25

The work in my department is now wholly in the line of language and literature. I have had, throughout the year, four classes daily, with the addition of a fifth once each week. The classes have been somewhat larger than in the previous year, and the entrance examinations showed them somewhat better prepared to enter upon their work.

The English course consists of one term in a review of English grammar, one term in English structure, one term in composition, one term in rhetoric, and one term in literature, together with a weekly drill in rhetoricals, that continues through the college course.

In the fall term the work is a review of technical grammar, with such exercises in composition and analysis as help to gain habits of correct expression. In this study I had all the members of the First-year class, and one division of the "B" or preparatory class, besides directing in some measure the work of a second preparatory class. In the winter term the First-year class studies the history, meaning and derivation of English words, together with the use of foreign words in the nomenclature of the various scientific studies. The

Third-year class studies the qualities of good expression, and in the practical drill applies the principles of rhetoric to the various forms of composition. In the spring term the students of the first year study the principles of composition, and apply them in daily exercises. Those of the third year make such studies in English literature as the limited time will permit. Some writings from the different periods are read in class; the history of the growth and the development of literature is studied, and the love of reading deepened as much as possible.

In addition to this, I have conducted the rhetorical work of the first year and the Fourth-year class. Outside of my class-room I have done the usual work in the lecture course, on the *Industrialist*, and in farmers' institutes. In the month of August, upon invitation, I visited six counties, and lectured before the teachers' institutes as a representative of the College.

Respectfully submitted.

O. E. OLIN,

Professor of English Language and Literature.

COLLEGE, June 30, 1890.

DEPARTMENT OF HOUSEHOLD ECONOMY AND HYGIENE, 1889-90.

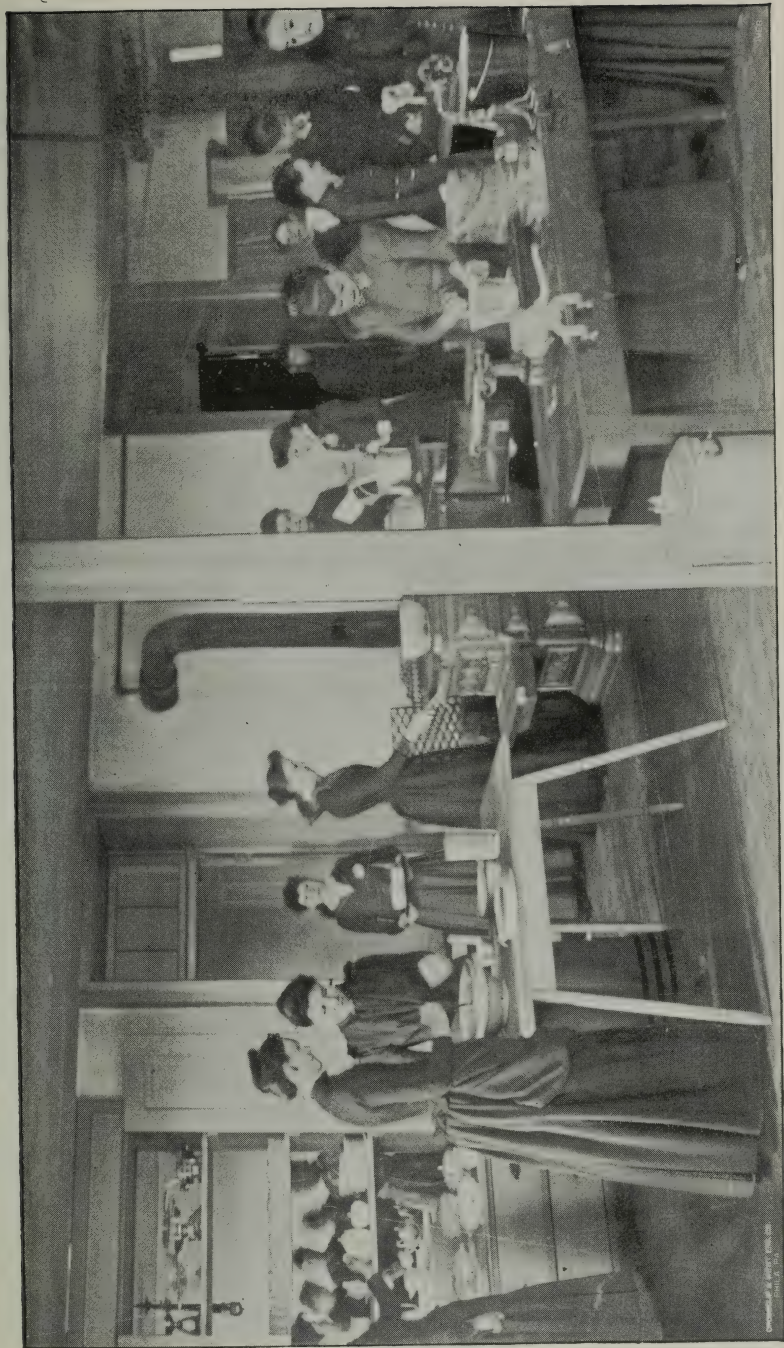
To the Board of Regents—GENTLEMEN: This report of the work done in the Domestic Department during the year ending June 30, 1890, is respectfully submitted.

During the fall term the usual class of Fourth-year young ladies studied English literature under my direction; and the special class in domestic science, carried on for the first time last year, was again pleasant work. This class, though numbering but five, did much work in the line of learning to cook dainties, various kinds of bread being among the most important lessons. Their work covered the same ground as did that of the class last year, a description of which is given in the report of last year, published in this volume, where will also be found a plan of the work of the regular Second-year class in household economy during the winter term.

The fall term also gave me two classes in arithmetic, making four hours of teaching during the forenoon, while two post-graduate students spent from two to four hours with me every afternoon.

The winter term found twenty-four Second-year young ladies in the class in household economy. This class took lectures and cooked, prepared Monday dinners and Friday lunches, and gave the usual winter-term party, very much as have other classes in years gone by. They also prepared and served a supper for the Regents, the Faculty and their wives, thus gaining some knowledge of entertaining and of serving guests.

This term there were three post-graduate students, two young ladies of our



KITCHEN LABORATORY.

own College, and one from Dakota, who is fitting herself to teach domestic science. They did much practice work, and one of them carried out a series of experiments in cooking meats at various temperatures.

This year \$253 were spent for groceries, and the staples were bought in about this proportion: Flour, \$24.35; meat, \$59.30; sugar, \$36.75; eggs, \$11.20; milk, \$6.80; coffee, \$11.30; butter, \$26.55.

The spring term found the class in household economy continued, as the class in dairying; and some cooking for the first time, was carried on in connection with the work with the milk.

The Monday dinners and the Friday lunches were kept up until the mid-term examination, though fewer tickets were sold, as a portion of the class was each day detailed to work with the milk and butter; consequently less cooking could be done than during the winter term.

One hundred and ninety pounds of butter and two small cheeses were the results of this term's work in the dairy.

The banquet given by the graduates of the College at the triennial reunion, which occurred this year, was prepared and served by the class in dairying. They cooked the food, set the tables, and waited upon the guests, winning for themselves much well-deserved praise for their dextrous skill in such work.

In the spring term I taught a small class in arithmetic and my usual class of Third-year girls in hygiene, which this year numbered twenty-three. These young ladies wrote essays upon subjects relating to physical, mental and moral strength and well-being, and spent many profitable minutes in the discussion of topics closely allied to healthful living.

The following summary will show the direction of expenditures during the year:

Debit:	
Materials for cooking	\$253 16
New equipment	13 00
Paper (Department bill)	2 75
Ice	5 30
Repairs	1 85
Student labor	14 30
Milk, for dairy (department bill)	36 27
Total.....	\$326 63
Credit:	
Cash, lunches and dinners	\$220 10
Cash, butter	27 40
Increase of inventory	5 30
Balance, expense	73 83
Total.....	\$326 63

One of the post-graduate students was given her second degree this year, and will teach domestic science in an institution similar to our own.

The usual general college work—the public lecture, work at farmers' institutes, and editorial work on the *Industrialist*—has helped to fill up all spare moments.

The year in the department has been pleasant, and I trust profitable to all connected with it.

Very respectfully,

NELLIE S. KEDZIE.

COLLEGE, June 30, 1890.

SEWING DEPARTMENT, 1889-90.

To the Board of Regents—GENTLEMEN: Herewith I respectfully submit to you my report of the Sewing Department for the year ending June 30, 1890.

The enrollment in this department during the last year has been larger than ever before, being in the fall term 109, winter term 94, and in the spring term 84, besides a class of three post-graduates who worked two afternoons each week during the year. The classes were so large that Miss Marlatt was employed as assistant.

During the year we made over 900 articles, 200 of them dresses. Thirty-five young ladies learned the system of cutting by measurement. Much time was spent in learning to use the needle and the sewing-machine, and in doing all kinds of plain practical work; such as knitting, crocheting, mending, and keeping their own clothes in order. Most of the young ladies furnished their own materials and worked for themselves.

The following statement will show somewhat the line of expenditures during the last year:

Debit:		
Machine.....	\$30 00	
Materials.....	28 73	
Cutting tables.....	29 60	
Paper.....	7 15	
		\$95 98
Credit:		
Cash.....	\$5 00	
Inventory increase.....	59 60	
		64 60
Balance, expense.....		\$31 38

Respectfully submitted.

MRS. ELIDA F. WINCHIP, *Superintendent of Sewing.*

COLLEGE, June 30, 1890.

MECHANICAL DEPARTMENT, 1889-90.

To the Board of Regents—GENTLEMEN: The year just closed has brought into the Mechanical Department more students than have ever before been

assigned in one year. In the last six years the enrollment in the three terms of each year has been as follows:

1884-85.....	352	1887-88.....	386
1885-86.....	401	1888-89.....	346
1886-87.....	405	1889-90.....	461

During the fall term 1889-90, 166 wood-workers, 4 iron-workers.

During the winter term 1889-90, 167 wood-workers, 3 iron-workers.

During the spring term 1889-90, 116 wood-workers, 5 iron-workers.

This large enrollment made necessary many classes, which reached the capacity of the shop for bench room. A large per cent. of these students are in the lower classes, and are employed on the most elementary work and in the elementary operations. This work as heretofore has been systematized graded work from drawings of simple constructions, a knowledge of the use of the most common wood-working tools, being a direct object together with a knowledge of working-drawings and the usual forms of wood construction. While these have been the most obvious objects to the student, the use of these objects as a means of good training and discipline has been uppermost in the plan of instruction.

The number of really skillful men and the amount of work produced, which would be anywhere classed as good, has been perhaps, up to the average of previous years, although many classes were beyond a reasonable size for good instruction with our present assistance. The large classes of the year have demonstrated the fact that a better equipment of bench tools is much needed.

In the iron-work only the simplest operations have been attempted. During the last six years sixty-three students have been assigned to the work—twelve this year. The Board is well aware that this part of the mechanical department has not kept pace in growth with other lines of our work, the growth of the College, or the demands of students. I wish to present to the Board plans for an increase in its efficiency.

The class in mechanics of 1890 was larger than heretofore, two divisions being met each day, one of twenty-seven members, the other of twenty-five. This work has been substantially as in the last two years. A course has been followed in applied and theoretical mechanics, carefully selected to adapt it to our mathematical course and short term of twelve weeks. The appropriation for the Mechanical Department of \$200 was expended in purchasing tools to enable me to make illustrative apparatus for the use of the mechanics classes. The coming year a number of pieces of new design will be built for this purpose. A continuance of the appropriation of \$200 each year is desirable for the purchase of material and tools for this manufacture of class-room apparatus.

In engineering, the object has been the same as declared two years ago in my report: "The object of the ten weeks' study being to enable the student to read intelligently the general engineering articles, and to appreciate the work of others in that line, as well as to stimulate to original investigation of such matters of engineering practice as could come under their observa-

tion." An object beyond this would be unsuited to the single term's work in this line.

Lectures have been given each day of the spring term following a course of elementary mechanical and civil engineering. This has been supplemented by original work by each student on some engineering subject, and constant reference to Howell's Engineers' Pocket-Book, as a repository of figures, formulae and notes. These lectures are better suited to the conditions than last year, or than any text-book available, yet much work remains to be accomplished before the conditions are as satisfactorily met as it seems is possible.

In addition to the classes at the shop and the classes in mechanics and in engineering, other regular work as a member of the Faculty has been the *Industrialist* articles, a lecture, and the general oversight of all repairs called for. For the first time the Mechanical Department was represented in the scheme of farmers' institutes by my attending an institute at Mankato, Jewell county.

The financial statement is as follows:

Expense, by vouchers.....	\$3,730 27	
Inventory of 1889.....	6,000 64	\$9,730 91
Department receipts.....	\$1,983 28	
Cash receipts.....	266 47	
Cash accounts due.....	65 53	
Department bills receivable.....	58 85	
Inventory of 1890.....	6,527 70	8,901 83
Deficit.....		829 08

This deficit is divided in various amounts in the same manner as years previous, except about \$100 for repairs on the boiler.

Respectfully submitted.

O. P. Hood,

Professor of Mechanics and Engineering, Superintendent of Workshops.

COLLEGE, June 30, 1890.

PRINTING DEPARTMENT, 1889-90.

To the Board of Regents—GENTLEMEN: The work of instruction in the Printing Department has been pursued during the past year with but little variation from the course followed in former years so far as the beginners and the students of the intermediate grades are concerned. In the case of the former, they have been given the usual course in type-setting and punctuation combined, followed, in succeeding terms, by thorough drill in both these studies before they are advanced to cases on the *Industrialist*. The students of the second and third year have been occupied chiefly in setting type on the *Industrialist*, but those whose capabilities warrant have been given elementary work in display composition. The students above referred to have done about two-thirds of the necessary type-setting for the paper. Although the time set

apart for industrials is limited to fifty minutes per day, the majority of students in their third year in the department make fair progress, while a few develop great speed and accuracy.

The young men of the advanced class (Seniors) have given their time almost wholly to job composition and press-work, with a degree of success that is highly creditable to them and gratifying to their instructor. They have composed a great variety of forms, many of them quite elaborate, and all illustrating some principle of display, and have done all the printing of them, both plain and in colors. As in former years, every effort is made to keep abreast of the times in matters typographical, and to this end the study of modern styles, the handiwork of printers of high repute, has been encouraged, and, for that matter, required. It is hardly necessary to say that in our advanced work we have been greatly aided by the new type faces provided by your Board, and without which the results attained would have been impossible.

The new type referred to in the preceding paragraph includes, or, in fact, is made up wholly of the latest products of the foundries. It is all made on the new interchangeable or "point" system, the convenience of which cannot be overestimated. The greater number of the old fonts of job and display type have been thrown out—a few of them sold at a fraction of their cost, and the remainder consigned to a receptacle befitting their battered and worn-out condition—the melting-pot. The remaining \$250 of our appropriation, available next year, will fairly equip the office for a moderate range of work. The need of another and somewhat larger job press is every day made more apparent, and I hope one will be provided for the coming year.

The *Industrialist*, as you have seen, has undergone a typographical change for the better. An entire new dress was put on at the beginning of the year, the columns were widened to properly admit the increased size of type, and the size of the sheet slightly increased. These changes were made necessary by the worn-out condition of the former dress. The type now in use is not quite what I would have chosen had the purchase of new material especially for the purpose been contemplated; but it was in stock, and was adopted for want of a better or more desirable "face."

Beyond a variety of small forms, the department has not done much work for pay; but the time thus saved has been employed to better advantage, I believe, in increased attention to instruction, forms having been chosen expressly to illustrate the principles of, and to give the students practice in, lines of work requiring the utmost care in their composition, and in the manipulation of which the learner gains skill that could not be acquired in any other way.

The customary large advertising editions of the *Industrialist* were printed—10,000 at the beginning, and 10,000 at the end of the year.

In point of attendance and interest, the year has been a successful one.

The attendance during the winter term was ninety—the largest in the history of the department. By terms, the attendance was as follows:

	Young men.....	Young women..	Totals.....
Fall.....	29	22	51
Winter.....	59	31	90
Spring.....	33	23	56

FINANCIAL STATEMENT.

DEBIT.		CREDIT.	
Inventory, June 30, 1889.....	\$3,450 14	Inventory, June 30, 1889.....	\$3,876 64
Appropriation.....	250 00	Receipts—Cash.....	366 30
Expenditures—Cash.....	1,353 55	Department transfers.....	499 11
Department transfers.....	113 05	Balance expense.....	424 69
Total.....	\$5,166 74	Total.....	\$5,166 74

Respectfully submitted.
COLLEGE, June 30, 1889.

J. S. C. THOMPSON,
Superintendent of Printing.

DEPARTMENT OF MUSIC, 1889-90.

To the Board of Regents—GENTLEMEN: I respectfully submit the following report of the Musical Department. The classes taught each term, and the number of pupils enrolled, were as follows:

Classes.	Females.	Males.	Totals.
Fall term, 1889:			
Instrumental music class.....	20	17	37
Singing class "B".....	36	17	53
Singing class "A".....	42	42	84
Voice culture.....	4	1	5
Glee Club.....		8	8
Orchestra.....			11
Writing.....	10	30	40
Totals.....	112	115	228
Winter term, 1890:			
Instrumental music class.....	16	11	27
Singing class "B".....	24	41	65
Singing class "A".....	16	12	28
Voice culture.....	3		3
Glee Club.....		6	6
Orchestra.....			14
Totals.....	59	70	143
Spring term, 1890:			
Instrumental music class.....	20	8	28
Singing class "B".....	11	21	32
Singing class "A".....	29	35	64
Voice culture.....	6	4	10
Glee Club.....		8	8
Harmony.....	2		2
Orchestra.....			21
Writing.....	12	20	32
Totals.....	80	96	197

My duties begin with chapel exercises in the morning and continue during the day, owing to the peculiar demands of my department. Assignments for practice and for lessons in instrumental music and voice culture are made with pupils for any hour in the day, which does not conflict with other college engagements.

The singing classes "A" and "B," Glee club and orchestra meet regularly as stated in the Catalogue. In addition to this work of instruction in the Musical Department, I meet a class in writing daily, during the fall and spring terms. I have contributed my share to the *Industrialist*, delivered a lecture before the College, and furnished music for the public on three occasions of general interest.

By virtue of my relations to the committees on socials and public entertainments, I have spent considerable time in preparation for the same, and the department has furnished music for the following exercises: The fall-term social; the Alpha Beta exhibition; the winter-term social; the exhibition of the Webster Society; the spring-term social; the exhibition of the Ionian Society; the baccalaureate sermon, three selections; the undergraduates' exhibition, six selections, three vocal and three instrumental; the annual address, two selections; and on Commencement Day six selections, three vocal and three instrumental.

I am pleased to report growth and increasing interest in the department; but this growth makes an increase of equipment a pressing necessity, and I would most respectfully ask that an appropriation be made for the purchase of a double-bass and piano.

Respectfully submitted.

A. B. BROWN, *Professor of Music.*

COLLEGE, June 30, 1890.

MILITARY DEPARTMENT, 1889-90.

To the Board of Regents—GENTLEMEN: I have the honor to submit the following report. There were enrolled for drill during the fall term, 161; winter term, 147; spring term, 136; with an average of two drills per week. The drills have included the schools of the soldier, company and battalion, skirmish drill, and target practice.

During the winter and spring terms, a part of the battalion received instruction in artillery drill and military signaling.

A course of thirty-two lectures, covering the course laid down in the catalogue, was given to the Second-year class.

Instruction was given to a volunteer class in "Upton's Infantry Tactics," throughout the year.

Forty new blouses, and the same number of forage caps, were purchased

for the department during the year. We have also received from the War Department, for use at the College, two three-inch rifles, complete.

In addition to my military duties, by special arrangement, during the fall term I had charge of the Fourth-year class in physics, a section of the Second-year class in algebra, and one section in arithmetic from the First-year class. During the winter term I had charge of two sections in arithmetic, and one in geography of "B" students.

In the spring term I had charge of the Third-year class (two sections) in physics, and one section in algebra, part first and part second year.

Respectfully submitted.

J. F. MORRISON,

(Second Lieut. 20th U. S. Infantry.)

COLLEGE, June 30, 1890.

Professor Military Science and Tactics.

DEPARTMENT OF HISTORY AND CONSTITUTIONAL LAW, 1889-90.

To the Board of Regents — GENTLEMEN: I respectfully submit the following report for the year 1889-90:

CLASSES AND ENROLLMENT.

<i>Classes.</i>	<i>Ladies.</i>	<i>Gentlemen.</i>	<i>Totals.</i>
FALL TERM.			
General History, third-year class (two divisions).....	25	42	67
Rhetoricals, second-year class (four divisions).....	29	57	86
Rhetoricals, third-year class.....	21	37	58
WINTER TERM.			
United States History, first-year class (three divisions).....	74	80	154
Rhetoricals, second-year class (four divisions).....	28	53	81
Rhetoricals, third-year class.....	18	36	54
SPRING TERM.			
Constitutional Law, fourth-year class.....	7	23	30
Rhetoricals, second-year class (four divisions).....	24	47	71
Rhetoricals, third-year class.....	17	36	53

In the study of constitutional law and history, the object kept steadily in view is training for citizenship. Students are encouraged to bring up for discussion in class-room the problems in political and social life that are receiving attention in the publications of the day. Independent thinking is encouraged. The short time allowed for each of the studies precludes exhaustive work, but is sufficient to lay a foundation on which students are encouraged to build, by further thought and research. Though the constitution of the United States engages our attention during the larger part of the spring term devoted to constitutional law, some time is found for talks on the constitution and statutes of Kansas.

The Second-year class in rhetorical was in four divisions, meeting once a week. A few lectures were given in the elements of emphasis, vocal culture, and gesturing. Each student was required to appear before the class once in two weeks with a declamation, essay, or oration. The Third-years appear once in four weeks with essays or orations. All the original work was examined and corrected. Students of the Third-year class are required to deliver one declamation and one oration before the whole College at appointed times during the College year. They are carefully trained by me for these events, and many private conferences are held with them in regard to their productions. It also falls to my lot to prepare the eight Third-years for their oration exhibition at Commencement.

The course in rhetorical is intended to furnish students with the opportunity to put in practice the principles of English composition taught in the English Department, and also to enable them to acquire a natural and effective delivery. Clear, logical, forcible speaking, rather than ornate oratory, is the ideal they are urged to keep before them.

I was a member of four College committees: Grades and Examinations, Catalogue, Entertainments, and Public Exercises. The first two required considerable time. The work of the Catalogue committee, of which I was chairman, was greatly increased this year on account of the publication of the quinquennial report of alumni and officers.

Respectfully submitted.

FRANCIS H. WHITE,

COLLEGE, June 30, 1890.

Professor of History and Constitutional Law.

FARM DEPARTMENT, 1889-90.

To the Board of Regents—GENTLEMEN: I have the honor to submit the following report of the work in the Farm Department for the year ending June 30, 1890. It covers my duty as Professor of Agriculture, Superintendent of the farm, and Agriculturist of the Experiment Station. My connection with the College dates from January 1, 1890, at which time my work began.

CLASS WORK.

During the winter term I gave instruction in agriculture to the young men of the Second-year class, fifty-three in number. They were taught by lectures. The subjects treated were: First, The History of Agriculture, and second, The History and Description of Breeds of Domestic Animals. In the History of Agriculture the aim was to give a succinct, yet clear account of the development and progress of agriculture from the earliest times to the present day, dwelling on the men and events through which impetus has been given to the work of progress. In the History and Description of Breeds of Domestic Animals, I gave a full account of the origin and characteristics of the important breeds of cattle, together with the men who improved them and the

methods they followed in their improvement, and finally the uses and conditions to which each breed is suited. It was my plan to treat in the same manner of all the important breeds of horses, sheep and swine, but the time allotted proved too short to cover the whole ground. Two terms, aggregating twenty-five weeks of five hours a week, in a course of four years, is not sufficient time in which to give the student even a moderately complete insight into the many diversified branches of practical agriculture. I respectfully suggest, that if it is possible, at least one term more be given to the study of agriculture in the class-room.

With very few exceptions, the members of the class made satisfactory progress in the subjects treated.

INDUSTRIAL WORK.

The same class (the young men of the second year) took their "industrial" on the farm during one-half of the spring term, where they without exception worked to the best of their ability and with credit to themselves. They shared in all kinds of work that occurred on the farm. At that season the work is for the most part in connection with the Experiment Station, the preparation, planting and culture of experiment plats. In the nature of things much of this work was instructive in its character.

Aside from the work connected with the above subjects, I attended three farmers' institutes during the winter, viz., at Stockton, Russell and Hays City, and on invitation I gave an address before the Dairywomen's Association at their meeting in Abilene.

FARM AND STOCK.

The dry weather in the early part of the present season operated to cut all farm crops short. The wheat crop, however, was fairly made before the drouth became severe, and our wheat will average 30 bushels per acre at a safe estimate. The oat crop was much affected by the dry weather, and will not average more than 25 bushels (estimated) per acre. Corn and forage crops are partial failures, and all the early corn has failed completely.

The herd has suffered from the same cause, both in short pastures and lack of water. For several weeks it has been necessary to drive the cattle daily from the upper farm, more than a mile away, to the barn to be watered, which was a severe strain on them. Otherwise I can report the herd in excellent condition. As authorized by your honorable body, the Farm Department has purchased three head of Holstein-Friesian cattle—two cows and a bull—from the herd of Mr. M. E. Moore, Cameron, Mo. One of the cows was a prize-winner at the Kansas State Fair in 1889.

There has been a ready sale for the young Shorthorn bulls in the herd, and I have also sold a few of the females, but the majority of the cows and heifers, listed to be sold, are still on hand.

The epizootic abortion, which has afflicted the herd for the last two years, has almost disappeared.

It became necessary to part with the Shorthorn bull, Scottish Chief, 89,317,

owing to the fact that several of his heifers of high individual merit are to be retained in the herd for breeding. As directed by the Board, I made arrangements with Col. W. A. Harris, of Linwood, Kas., by which we exchanged Scottish Chief for his imported Royal Pirate, (56,492.) Royal Pirate is a pure Cruickshank bull, having been bred by the famous founder of this strain of Shorthorns, Mr. Amos Cruickshank, of Sittyton, Scotland, and is out of one of his most popular families. He was three years old last January, and in most points is an uncommonly fine bull.

There are on the farm only two breeds of pigs—Poland-Chinas and Berkshires, all of which, however, are pure bred. Their produce sells readily for breeding stock, and what is not thus sold is used in experimenting. It would in my opinion be desirable to get representatives of two or three more breeds suited to the prevailing conditions of this State, to serve as types for the benefit of our students.

The number and value of the live stock on the farm is shown in the inventory, taken June 30th, a summary of which appears in the report of the Secretary.

EXPERIMENTS.

As agriculturist of the Experiment Station I can report that we have undertaken extensive field experiments with wheat, corn, and oats, and forage plants, covering altogether the present year 1,100 plats. Reports on these experiments will be issued from time to time as the work becomes complete. They are planned with a view to meet the special requirements of Kansas farmers, the aim being to obtain results which shall be of real benefit to the farmer by pointing out what crops to grow, and the best methods of growing them.

Experiments in pig-feeding are also under way and others will be undertaken, all of which will be reported as soon as completed.

NEEDS OF THE DEPARTMENT.

Although the Farm Department is in good working order, there are a few pressing needs which if supplied would greatly enhance its efficiency. One of these needs is a farm-house, so that the foreman and hands can live on the premises. At present there is no building on the place in which they can be housed; they are obliged to board in various places in town, often more than a mile away, and none of them can be kept on the place except during work hours. I need not point out the disadvantage of this arrangement; it is apparent enough. How many farmers in the State whose assets in barns, stock and implements amount to upwards of \$20,000, as do those of the Farm Department, would have their foreman and hands live a mile or so from the premises, entirely beyond reach except from 7 A. M. to 6 P. M. on week-days? I venture to say, not one. Yet for want of a farm-house the Farm Department of the Kansas State Agricultural College is left in just that position.

The department needs a new piggery. The old piggery, containing six pens, has never been a model of convenience, and is now so decrepit from old

age as to be of little use. I respectfully submit for consideration of the Board a plan and estimate for a new piggery containing 14 pens, cook-room, and feed bins.

The farm needs additional shelter for wagons and implements, for which there is insufficient house-room.

There is also great need of a store-room for the use of the Experiment Station and farm jointly, part of which at least should be made vermin-proof, for the storage of seeds, varieties of grain and samples of the crops of all kinds. These articles accumulate fast, and must be kept on hand for a longer or shorter time. They are of great interest for study and comparison, but there is at present no suitable place in which to store them.

I respectfully suggest that as soon as the way is clear to do so, it would be very desirable to have the water-works extended to the barn. To say nothing of the added security in case of fire, the water is needed for the stock. As already stated it became necessary to drive the cattle to the barn for water this summer, but in the course of a short time the well at the barn also gave out, entailing much trouble to supply the suffering cattle. Security against a recurrence of this suffering can most readily be attained by connection with the water-works.

There has been no change in the personnel of the farm the past year. Mr. Wm. Shelton is foreman, and Mr. H. M. Cottrell assistant in the Experiment Station. Both are very efficient officers.

The following is the financial statement of the Department for the year:

RECEIPTS AND EXPENDITURES FOR THE YEAR ENDING JUNE 30, 1890.

DEBIT.		CREDIT.	
Inventory, June 30, 1889.....	\$26,064 75	Inventory, June 30, 1890.....	\$26,716 70
Cash expenditures.....	3,177 60	Cash receipts.....	2,049 07
Appropriation for fences and imple- ments.....	200 00	Department transfers.....	38 79
Department transfers.....	76 63	Balance.....	714 42
Total.....	\$29,518 98	Total.....	\$29,518 98

All of which is respectfully submitted.

CHARLES C. GEORGESON,

Professor of Agriculture, and Superintendent of the Farm.

COLLEGE, June 30, 1890.

APPENDIX.

THE STATION COUNCIL.

PRES. GEORGE T. FAIRCHILD, A.M.,

Chairman ex officio.

PROF. GEORGE H. FAILYER, M.S.,

Chemist.

PROF. EDWIN A. POPENOE, A.M.,

Horticulturist and Entomologist.

PROF. WILLIAM A. KELLERMAN, Ph.D.,

Botanist.

PROF. CHARLES C. GEORGESON, M.S.,

Agriculturist.

PROF. NELSON S. MAYO, M.S., D.V.S.,

Veterinarian.

SEC. IRA D. GRAHAM, B.S.,

Secretary ex officio.

ASSISTANTS AND FOREMEN.

J. T. WILLARD, M.S., *Chemistry.*

S. C. MASON, B.S., *Horticulture, Foreman of Gardens.*

F. A. MARLATT, B.S., *Entomology.*

W. T. SWINGLE, B.S., *Botany.*

H. M. COTTRELL, M.S., *Agriculture.*

WM. SHELTON, *Foreman of Farm.*

EXPERIMENT STATION.

THE HATCH LAW.

AN ACT to establish Agricultural Experiment Stations in connection with the colleges established in the several States under the provisions of an act approved July 2d, 1862, and of the acts supplementary thereto.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under direction of the college or colleges, or agricultural department of colleges, in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an act approved July 2d, 1862, entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," or any of the supplements to said act, a department to be known and designated as an "Agricultural Experiment Station:" *Provided,* That in any State or Territory in which two such colleges have been or may be so established, the appropriation hereinafter made to such State or Territory shall be equally divided between such colleges, unless the Legislature of such State or Territory shall otherwise direct.

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

SEC. 3. That in order to secure, as far as practicable, uniformity of methods and results in the work of said stations, it shall be the duty of the United States Commissioner of Agriculture to furnish forms, as far as practicable, for the tabulation of results of investigation or experiments; to indicate from time to time such lines of inquiry as to him shall seem most important; and in general, to furnish such advice and assistance as will best promote the purposes of this act. It shall be the duty of each of said stations, annually, on or before the first day of February, to make to the Governor of the State or Territory in which it is located, a full and de-

tailed report of its operations, including a statement of receipts and expenditures, a copy of which report shall be sent to each of said stations, to the Commissioner of Agriculture, and to the Secretary of the Treasury of the United States.

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports, and the annual reports of said stations, shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore prescribed, the sum of \$15,000 is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of section eight of this act, out of any money in the treasury proceeding from the sales of public lands, to be paid in equal quarterly payments on the first day of January, April, July and October in each year, to the treasurer or other officer duly appointed by the governing boards of said colleges to receive the same, the first payment to be made on the first day of October, 1887: *Provided, however,* That out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement, or repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

SEC. 6. That whenever it shall appear to the Secretary of the Treasury, from the annual statement of receipts and expenditures of any of said stations, that a portion of the preceding annual appropriation remains unexpended, such amount shall be deducted from the next succeeding annual appropriation to such station, in order that the amount of money appropriated to any station shall not exceed the amount actually and necessarily required for its maintenance and support.

SEC. 7. That nothing in this act shall be construed to impair or modify the legal relation existing between any of the said colleges and the government of the States or Territories in which they are respectively located.

SEC. 8. That in States having colleges entitled under this section to the benefits of this act, and having also agricultural experiment stations established by law separate from said colleges, such States shall be authorized to apply such benefits to experiments at stations so established by such States; and in case any State shall have established, under provisions of said act of July 2d aforesaid, an agricultural department or experimental station in connection with any university, college or institution not distinctively an agricultural college or school, and said States shall have established or shall hereafter establish a separate agricultural college or school which shall have connected therewith an experimental farm or station, the Legislature of such State may apply in whole or in part the appropriation by this act made to such agricultural college or school; and no Legislature shall, by contract express or implied, disable itself from so doing.

SEC. 9. That the grants of moneys authorized by this act are made subject to the legislative assent of the several States and Territories to the purposes of said grants: *Provided,* That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of the Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 10. Nothing in this act shall be held or construed as binding the United States to continue any payments from the treasury to any or all the States or institutions mentioned in this act; but Congress may at any time amend, suspend or repeal any or all of the provisions of this act.

Approved March 1, 1887.

As soon as the news came that the President had signed the above bill, the State Legislature passed the following

CONCURRENT RESOLUTION.

Be it resolved by the Senate of the State of Kansas, the House concurring, That the annual appropriation of fifteen thousand dollars (\$15,000), made available to the State of Kansas under the act of Congress for the maintenance of an Experiment Station, for the benefit of agriculture, in connection with each college established under the act of Congress approved July 2, 1862, be and is hereby placed under the control of the Board of Regents of the Kansas State Agricultural College, subject to rules and regulations expressed or implied in the act of Congress above named.

Approved March 3, 1887.

ORGANIZATION.

The general features of the Station, in its organization and equipment, as settled by the Board of Regents, are here given for the information of the public, for the most part in the exact terms of the minutes of the meeting:

Whereas, The Legislature of the State of Kansas, by resolution dated March 3d, 1887, accepted the provisions of an act of Congress entitled "An act to establish Agricultural Experiment Stations in connection with the colleges established in the several States under the provisions of an act approved July 2d, 1862, and of the acts supplemental thereto," and placed the disposition of the appropriation under the control of the Board of Regents of the Kansas State Agricultural College:

Now, therefore, we, the Board of Regents of the Kansas State Agricultural College, do hereby establish an Agricultural Experiment Station in connection with, and as a part of, the said College, under the following regulations:

1. The general executive management of the Station shall be under the control of a Council, to consist of the President of the College, the Professors of Agriculture, Horticulture and Entomology, Chemistry, Botany, and Veterinary Science, and such other officers of the College as the Board may designate.

2. The President of the College shall be, *ex officio*, Chairman of the Council, and shall have the same supervisory control of the Experiment Station as of other departments of the College.

3. The Professor of Agriculture shall conduct original researches or verify experiments upon the comparative advantages of rotative cropping as pursued under a varying series of crops, together with experiments designed to test the comparative effects of the various manures, natural or artificial, on crops of different kinds; the adaptation and value of different grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals, and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable.

4. It shall be the duty of the Professor of Chemistry to conduct original researches or verify experiments in the chemical composition of useful plants at the different stages of growth; the analysis of soils and waters; the chemical composition of manures, natural or artificial, and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable.

5. The Professor of Horticulture and Entomology shall conduct original researches or verify experiments on the capacity of new plants or trees for acclimation; the diseases to which they are severally subject, and the remedies therefor, together with all questions in economic entomology, and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable.

6. The Professor of Botany shall conduct original researches or verify experiments on the physiology of plants; the diseases to which they are subject, with the remedies for the same; and such other researches and experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable.

7. It shall be the duty of the Professor of Human and Comparative Physiology and Veterinary Science to conduct original researches or verify experiments in the composition and digestibility of the different kinds of food for domestic animals, the diseases to which they are subject, together with their prevention and cure; and such other original researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable.

8. Each member of the Council shall have full control of experiments assigned to his own department, and if any question arises as to the scope of any experiment, or by whom it shall be conducted, the same shall be decided by the Chairman of the Council.

9. Assistants shall be chosen by the heads of departments, subject to ratification by the Council; but the rates of compensation shall be fixed by the Board of Regents.

10. Estimates for equipment of the Station shall be submitted by the Council at each quarterly meeting of the Board of Regents, through the Secretary of the Board.

11. The funds of the Station shall be held strictly to the purposes contemplated in the act of Congress, in a separate account on the books of the Secretary and the Treasurer, with distinct vouchers for all expenditures, which shall be audited and paid as other vouchers for special appropriations.

12. The Assistant Secretary of the Board shall be, *ex officio*, Secretary of the Council, whose duties shall be to keep the records of all meetings, receive and maintain all general correspondence with the Station, attend to the publication and distribution of all reports and bulletins under direction of the Council, certify to all bills, and keep accounts of the same.

13. Bulletins may be issued to the public from time to time under the law, as the Council may order, and there shall be printed in each the words: "By order of the Council;" but the annual report to the Governor shall be made through the Board of Regents.

Supplemental resolutions declare that John E. Hessin, Treasurer of the College, shall receive and disburse the funds of the Station, and that the Chairman of the Council shall exercise the franking privilege conferred by the act of Congress.

THE COLLEGE AID BILL.

AN ACT to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts, established under the provisions of an act of Congress approved July 2, 1862.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be, and hereby is, annually appropriated, out of any money in the treasury not otherwise appropriated, arising from the sales of public lands, to be paid as hereinafter provided, to each State and Territory, for the more complete endowment and maintenance of colleges for the benefit of agriculture and mechanic arts now established, or which may be hereafter established, in accordance with an act of Congress approved July 2, 1862, the sum of \$15,000 for the year ending June 30, 1890, and an annual increase of the amount of such appropriation thereafter for ten years by an additional sum of \$1,000 over the preceding year, and the annual amount to be paid thereafter to each State and Territory shall be \$25,000, to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction: *Provided*, That no money shall be paid out under this act to any State or Territory for the support and maintenance of a college where a distinction of race or color is made in the admission of students, but the establishment and maintenance of such colleges separately for white and colored students shall be held to be a compliance with the provisions of this act if the funds received in such State or Territory be equitably divided as hereinafter set forth: *Provided*, That in any State in which there has been one college established in pursuance of the act of July 2, 1862, and also in which an educational institution of like character has been established, or may be hereafter established, and is now aided by such State from its own revenue, for the education of colored students in agriculture and the mechanic arts, however named or styled, or whether or not it has received money heretofore under the act to which this act is an amendment, the Legislature of such State may propose and report to the Secretary of the Interior a just and equitable division of the fund to be received under this act between one college for white students, and one institution for colored students, established as aforesaid, which shall be divided into two parts and paid accordingly; and thereupon such institution for colored students shall be entitled to the benefits of this act and subject to its provisions, as much as it would have been if it had been included under the act of 1862, and the fulfillment of the foregoing provisions shall be taken as a compliance with the provision in reference to separate colleges for white and colored students.

SEC. 2. That the sum hereby appropriated to the States and Territories for the further endowment and support of colleges shall be annually paid on or before the thirty-first day of July of each year, by the Secretary of the Treasury, upon the warrant of the Secretary of the Interior, out of the Treasury of the United States, to the State or Territorial Treasurer, or to such officer as shall be designated by the laws of such State or Territory to receive the same, who shall, upon the order of the Trustees of the college, or the institution for colored students, immediately pay

over said sums to the Treasurers of the respective colleges or other institutions entitled to receive the same, and such Treasurers shall be required to report to the Secretary of Agriculture and to the Secretary of the Interior, on or before the first day of September of each year, a detailed statement of the amount so received and of its disbursement. The grants of moneys authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grants: *Provided*, That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 3. That if any portion of the moneys received by the designated officer of the State or Territory for the further and more complete endowment, support and maintenance of colleges, or of institutions for colored students, as provided in this act, shall, by any action or contingency, be diminished or lost, or be misapplied, it shall be replaced by the State or Territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such State or Territory; and no portion of said moneys shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings. An annual report by the President of each of said colleges shall be made to the Secretary of Agriculture, as well as to the Secretary of the Interior, regarding the condition and progress of each college, including statistical information in relation to its receipts and expenditures, its library, the number of its students and professors, and also as to any improvements and experiments made under the direction of any experiment stations attached to said colleges, with their costs and results, and such other industrial and economical statistics as may be regarded as useful, one copy of which shall be transmitted by mail free to all other colleges further endowed under this act.

SEC. 4. That on or before the 1st day of July of each year, after the passage of this act, the Secretary of the Interior shall ascertain and certify to the Secretary of the Treasury as to each State and Territory, whether it is entitled to receive its share of the annual appropriation for colleges, or of institutions for colored students, under this act, and the amount which thereupon each is entitled respectively to receive. If the Secretary of the Interior shall withhold a certificate from any State or Territory of its appropriation, the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the treasury until the close of the next Congress, in order that the State or Territory may, if it should so desire, appeal to Congress from the determination of the Secretary of the Interior. If the next Congress shall not direct such sum to be paid it shall be covered into the treasury. And the Secretary of the Interior is hereby charged with the proper administration of this law.

SEC. 5. That the Secretary of the Interior shall annually report to Congress the disbursements which have been made in all the States and Territories, and also whether the appropriation of any State or Territory has been withheld, and if so, the reasons therefor.

SEC. 6. Congress may at any time amend, suspend or repeal any or all of the provisions of this act.

Approved August 30, 1890.

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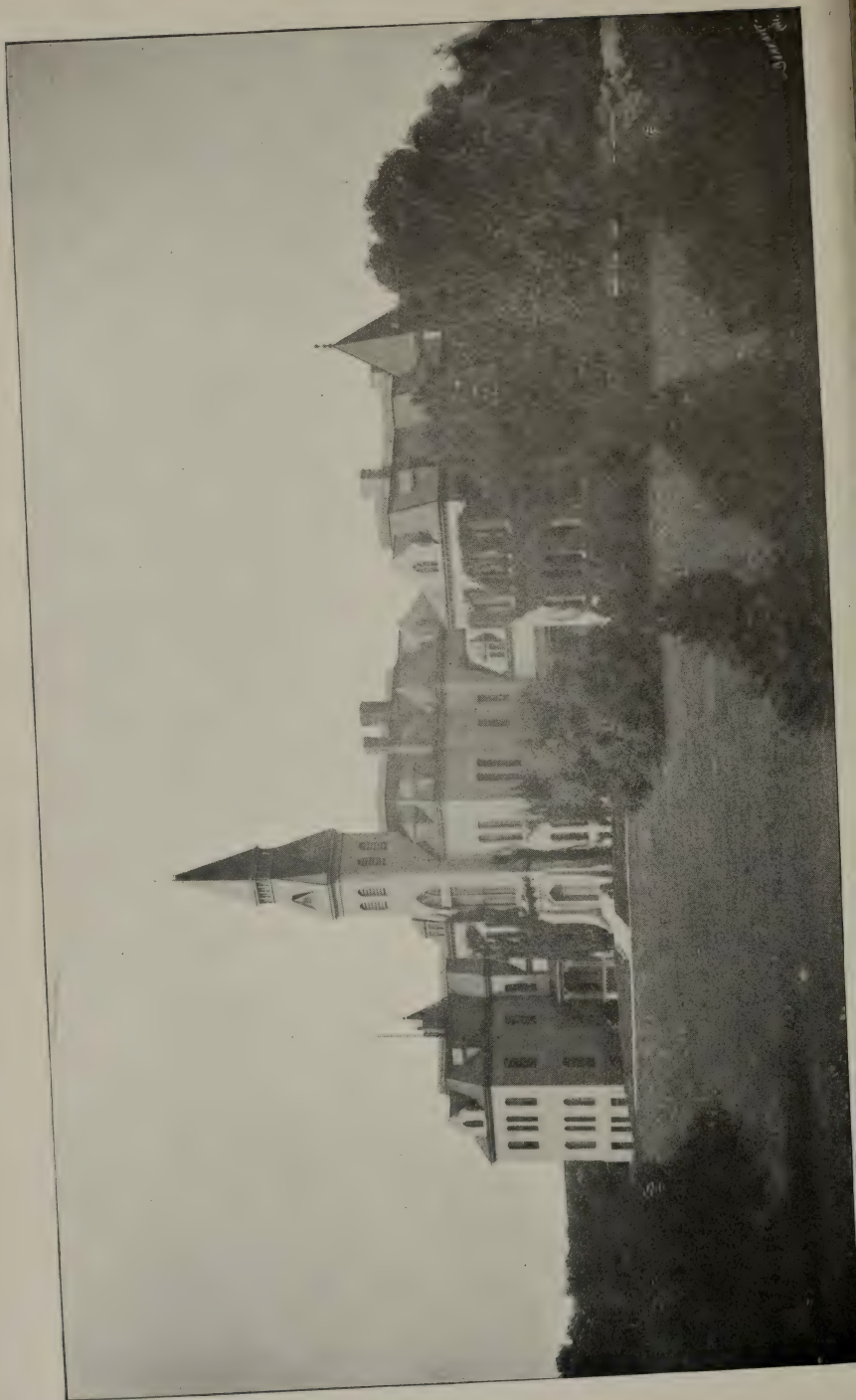
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ERRATUM.

On page 6 Insert, under "Assistants and Foremen":

Wm. Baxter, foreman of greenhouse.....	720	720
And change totals of columns to read.....	\$10,400	\$22,260	\$32,660



STATE AGRICULTURAL COLLEGE,

MANHATTAN, KANSAS.

EIGHTH BIENNIAL REPORT

OF THE

REGENTS AND FACULTY.

1891-'92.

WITH APPENDIX.

TOPEKA.

PRESS OF THE HAMILTON PRINTING COMPANY:

EDWIN H. SNOW, State Printer.



1892.

BOARD OF REGENTS.

HON. A. P. FORSYTH, (1894,)* *President*,
Liberty, Montgomery Co.

HON. R. W. FINLEY, (1893,) *Vice-President*,
Goodland, Sherman Co.

HON. T. P. MOORE, (1893,) *Loan Commissioner*,
Holton, Jackson Co.

HON. JOSHUA WHEELER, (1894,) *Treasurer*,
Nortonville, Jefferson Co.

HON. F. M. CHAFFEE, (1895,)
Wyckoff, Lyon Co. *

HON. R. P. KELLEY, (1895,)
Eureka, Greenwood Co.

PRESIDENT GEO. T. FAIRCHILD, (*ex officio*,) *Secretary*,
Manhattan, Riley Co.

I. D. GRAHAM, *Assistant Secretary*,
Manhattan, Riley Co.

* Term expires.

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KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KAS., December 20, 1892.

To his Excellency Lyman U. Humphrey, Governor:

DEAR SIR—I transmit herewith, under the laws of the State, the eighth biennial report of the Board of Regents of the Kansas State Agricultural College, including the reports of the President, professors, and other officers, for the years ending June 30, 1891, and June 30, 1892.

Respectfully yours,

GEO. T. FAIRCHILD,
Secretary Board of Regents.

BOARD OF REGENTS' REPORT.

STATE AGRICULTURAL COLLEGE,
MANHATTAN, November 11, 1892.

To his Excellency Lyman U. Humphrey, Governor of Kansas:

SIR—The Board of Regents of the Kansas State Agricultural College respectfully submit this, their eighth biennial report, for the two years ending June 30, 1892, appending thereto reports of the several departments, as provided by law.

The past two years have shown more than the usual prosperity in the growth of the institution, as well as in its administration. The general character of the work accomplished, the improved equipments, the enlarged attendance, and the generally-expressed satisfaction among the people of the State, are items of congratulation to the Board. The several reports of the President, professors and subordinate instructors present the particulars of growth in the several departments. It is necessary, in this report, to call attention in a general way to the condition of the institution, its equipments in buildings and apparatus, and its financial condition, with special reference to important needs.

Although crowded beyond the capacity of the buildings for most satisfactory work, the College in every department has been well maintained, and the work of educating the sons and daughters of farmers and mechanics in line with prominent industries of the State is so well maintained as to make the Kansas State Agricultural College the largest of such institutions in the country, or even in the world. The few improvements authorized by the last Legislature have been economically made, and have given possible enlargement, especially in the direction of mechanic arts. A specific report of the several appropriations is given in the report of the Secretary, hereto attached, and the special advantages added are referred to in the various reports. The general prosperity and advancement may be presented here under the several headings of "Board of Instruction," "Students," "Material Growth," "National Aid," "Experiment Station," and "Farmers' Institutes."

BOARD OF INSTRUCTION.

Few changes have occurred in the *personnel* of the corps of instruction. These will found in the report of the President, together with a full statement of the organization of the Faculty, the general order of discipline and busi-

ness, as well as the results for the period covered. The names, titles, and present salaries of the regular employes of the College and Station are herewith stated in full, with a complete showing of the several funds from which the salaries are paid.

BOARD OF INSTRUCTION.	From Station fund.	From annual fund, act of '90.	From income fund.	Total.
George T. Fairchild, A. M., ¹ President, Professor of Logic and Political Economy.....	\$300		\$2,700	\$3,000
George H. Failyer, M. Sc., Professor of Chemistry and Mineralogy.....	800	\$1,200		2,000
Edwin A. Popenoe, A. M., Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.....	800	1,200		2,000
David E. Lantz, M. Sc., Professor of Mathematics, Librarian.....		1,600		1,600
John D. Walters, M. Sc., Professor of Industrial Art and Designing.....		1,600		1,600
Ira D. Graham, B. Sc., Secretary, Instructor in Book-keeping.....	400		1,400	1,800
Oscar E. Olin, Professor of English Language and Literature.....		1,600		1,600
Mrs. Nellie S. Kedzie, M. Sc., Professor of Household Economy and Hygiene.....			1,200	1,200
Mrs. Elida E. Winchip, Superintendent of Sewing.....			1,000	1,000
Ozni P. Hood, B. Sc., Professor of Mechanics and Engineering, Superintendent of Workshops.....		1,600		1,600
Alexander B. Brown, A. M., ² Professor of Music.....			600	600
John S. C. Thompson, Superintendent of Printing.....			1,200	1,200
Francis H. White, A. M., Professor of History and Constitutional Law.....			1,600	1,600
Charles C. Georgeson, M. Sc., ¹ Professor of Agriculture, Superintendent of Farm.....	1,200	800		2,000
Edwin B. Bolton, ³ Captain 23d U. S. Infantry, Professor of Military Science and Tactics.....			1,600	1,600
Ernest R. Nichols, A. M., Professor of Physics.....				
Nelson S. Mayo, D. V. S., M. Sc., Professor of Physiology and Veterinary Science.....	780	1,020		1,800
Julius Willard, M. Sc., Assistant Professor of Chemistry.....	900	500		1,400
Albert S. Hitchcock, M. Sc., Professor of Botany.....	780	1,020		1,800
Silas C. Mason, B. Sc., Assistant Professor of Horticulture.....	900	500		1,400
Miss Josie Harper, Instructor in Mathematics.....			1,000	1,000
Miss Alice Rupp, Instructor in English.....			1,000	1,000
ASSISTANTS AND FOREMEN.				
C. M. Breese, M. Sc., assistant in chemistry.....	900			900
Julia R. Pearce, B. Sc., assistant librarian.....			600	600
Bessie B. Little, B. Sc., assistant in sewing.....			360	360
Grace M. Clark, B. Sc., stenographer in executive offices.....			480	480
Wm. Baxter, foreman of greenhouse.....			800	800
W. L. House, foreman of carpenter shop.....		800		800
E. Harold, foreman of iron shop.....		720		720
C. A. Gundaker, engineer.....			720	720
A. C. McCreary, janitor.....			800	800
ASSISTANTS IN EXPERIMENT STATION.				
F. A. Marlatt, B. Sc., entomology.....	800			800
Wm. Shelton, foreman of farm.....	800			800
F. C. Burtis, B. Sc., agriculture.....	720			720
M. A. Carleton, B. Sc., botany.....	720			720
Totals.....	\$9,900	\$16,060	\$16,060	\$42,020

¹ With house.² With fees from instrumental music lessons.³ Detailed by order of the War Department without extra pay, except by special arrangement for extra teaching outside the Military Department.

In addition to the above-named instructors, post-graduate students have been from time to time employed in charge of special classes, at a moderate compensation. Although such work has been well received by the students, and undoubtedly well done, it is not by any means as satisfactory in the maintainance of college work as that of more permanent instructors would be. At the same time, for want of sufficient room, it has seemed impossible

to enlarge the corps of instructors to meet the full needs of the College. The classes have been too large for most effective work in several departments; and with the natural increase of the coming winter, the ingenuity of the Faculty will be tried to the utmost to provide for the large body of students. The two additional instructors for the year 1892-'93 are not sufficient to meet our wants in this direction.

STUDENTS.

The attendance during the past two years, reaching an enrollment in each of nearly 600, is unprecedented in any similar institution. The average age of these students, nearly 20 years, and the extent of territory from which they come, embracing some 82 counties of this State and more than a dozen neighboring States, as shown in detail by the President, indicate the hold which the College has upon the people, and the actual adaptation of its methods to the needs of young men and women who are seeking preparation for the industries of life. While the large majority of these 600 students do not complete the full course of study, statistics recently gathered show that the mass of them appreciate the advantages their college life has given, and their warm sympathy for the work of the College is maintained wherever they go. The graduating classes of the past two years have been much larger than ever before, being respectively 52 and 36, an increase over the average of any previous two years of 18, or nearly 70 per cent.

The whole number of graduates since the first class, in 1867, is 320, of whom 105 are young women. Statistics published in the last annual catalogue show that barely 15 per cent. of these are engaged in professional life, as lawyers, ministers, and physicians; and while all the rest are found in 25 different employments, 35 per cent. are directly connected with agriculture and agricultural interests.

The advancement of the body of students has improved somewhat with the superior preparation of the common schools. So evident has been this improvement, that it has been found practicable to accept, without examination, students who bring diplomas from the best 60 county courses, or certificates of having passed the grammar grade in more than 50 different cities. At the same time, it has been found practicable to increase the requirements for admission, so that the course of study, while still in close relation to the country schools, does not provide for instruction in the ordinary common-school studies. The general character of this course is well understood as giving a thorough training in the English language, mathematics, and the sciences related to agricultural and mechanical life, together with definite training in various mechanical arts, especially in agriculture, mechanic arts, and household economy. The course now stands, with various adjustments to meet the special needs of young men and women, as in the following outline:

FIRST YEAR.

Fall Term.—Algebra, English Analysis, Geometrical Drawing, Industrial.

Winter Term.—Algebra, English Composition, Book-keeping, Free-hand Drawing three times a week, Industrial.

Spring Term.—Algebra, English Structure, Botany, Industrial (Carpentry, or Sewing).

SECOND YEAR.

Fall Term.—Geometry, Elementary Chemistry, Horticulture, Industrial.

Winter Term.—Geometry (completed) and Projection Drawing, Agriculture, or Household Economy, Organic Chemistry and Mineralogy, 12 Lectures in Military Science, Industrial (Cooking).

Spring Term.—Anatomy and Physiology, Entomology, Analytical Chemistry, 20 Lectures in Military Science, Industrial (Farm and Garden, or Dairy).

THIRD YEAR.

Fall Term.—Trigonometry and Surveying, Agricultural Chemistry, General History, Industrial (Farm and Garden).

Winter Term.—Mechanics, Constitutional History and Civil Government, Rhetoric, Industrial.

Spring Term.—Civil Engineering, or Hygiene, Physics, English Literature, Perspective Drawing two hours per week, and Drafting two hours, Industrial.

FOURTH YEAR.

Fall Term.—Agriculture, or Literature, Physics and Meteorology. Psychology, Industrial.

Winter Term.—Logic (Deductive and Inductive), Zoölogy, Structural Botany, Veterinary Science, or Floriculture, Industrial.

Spring Term.—Geology, Political Economy, an elective in Agriculture, Horticulture, Mechanics, or related sciences, Industrial.

Fuller particulars in regard to the studies are given in the annual catalogue. In addition to the above, special classes are provided for full-grown men and women, who for lack of early advantages are not able to enter upon the course as here provided. A special, irregular course may be taken by individual students as the Faculty may decide in each instance; but in no case are students allowed to leave one side the prominent sciences connected with the industries or the regular industrial training in the several departments. The number of post-graduate students desiring to continue the special sciences and technical training is on the increase. For such students, the plan of conferring second degrees after two or more years of study and experience has proved satisfactory. The requirements for this second degree, of master of science, are as follows:

1. Each candidate shall furnish satisfactory evidence to the Faculty of proficiency in at least one of each of the groups of arts and sciences here named:

Arts.—Agriculture, horticulture, engineering, architecture and designing, domestic economy.

Sciences.—Botany, chemistry, zoölogy, entomology, physics.

2. Each candidate must present for consideration by the Faculty a satisfactory thesis, involving original research in line with one or other of the courses pursued as above, and shall deposit a perfect copy in the College library.

3. Application to the Faculty for sanction of the lines of study and research selected should be made as early as the first day of November, and the subject of the thesis must be settled upon as soon as the first day of January preceding the commencement at which the degree is expected.

4. Candidates must be from graduates of three or more years' standing, unless a



IRON AND WOOD WORK SHOPS.

post-graduate course of one year or more has been pursued at this College, in which case the second degree may be conferred two years after graduation.

Outlines of direction for study and research in various arts and sciences, with special adaptation to the wants and opportunities of individual applicants, will be furnished, at request, to all graduates; and professors in charge will gladly aid by correspondence in any research undertaken.

The thorough preparation for systematic work given by these courses is proved by the number of graduates who are winning a name for themselves and their College in the schools of agriculture and agricultural experiment stations elsewhere, as well as in higher schools of technology. The fact that three graduates are prominent workers in the Department of Agriculture, at Washington, two have been assistants at Cornell University, and more fill responsible chairs in the younger agricultural colleges, shows the appreciation of such work in other parts of the country.

MATERIAL GROWTH.

During the past two years the development of the College in grounds, buildings and equipments has been less noticeable, perhaps, than in former periods. The grounds, with the development of the plantations, according to the plan of an experienced landscape gardener, have grown to be most beautiful, as well as instructive, and are counted as the finest specimens of landscape gardening with experimental planting of trees and shrubs as yet found in the State. The farm, orchard and grounds are in most excellent condition. While given almost wholly to experiments in cultivation, they have also been productive, giving excellent examples of thorough culture and scientific methods.

But one new building has been erected, an iron shop, 40x80 feet, constructed of stone, iron, and glass, in most approved methods. It is considered a most admirable specimen of economy in construction and of economical use of light and space. This was provided by an appropriation of \$4,000. Other buildings have been kept in fair condition, and in some respects improved. One wing of the main building, heretofore covered with shingles, and other subordinate buildings, have been covered with new roofs of steel-tinned shingles, thoroughly laid and painted. An excellent system of sewers has been provided for all the buildings, with wash-rooms and water-closets attached.

In equipments the growth has been much more noticeable, as will appear from the summary of the annual inventory. This has been especially in the line of tools and machinery in the shops, and implements in agriculture and horticulture, with some enlargement of illustrative cabinets in the museums. The library, for lack of suitable and sufficient room, has been seriously hampered in its growth, and the natural development of the general museum has been hindered by unsatisfactory provision for its permanent housing. In spite of these hindrances, the growth has been considerable in all directions,

so that it is possible to say of this institution what can probably be said of no other State institution, that the value of its equipments in grounds, buildings and apparatus is to-day more than all the appropriations made by the State since its beginning. The amount of these appropriations is about \$290,000, while the inventory of the College and Station property reaches a value of nearly \$300,000.

NATIONAL AID.

The growth of the past two years has been aided materially by the increased income provided under act of Congress approved August 30, 1890, the provisions of which were accepted by the Legislature in 1891. Under this act, the College has received, up to July 30, 1892, \$48,000, which, as required by law, has been applied only to "instruction in agriculture and mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their application in the industries of life, and to the facilities for such instruction." Full reports of expenditures in each year have been made to the United States Secretary of the Interior, and to the Secretary of Agriculture, copies of which are appended to this report.

EXPERIMENT STATION.

The lines of work carried on in the Experiment Station during the past two years have been similar to those of previous years, and have embraced such questions as seemed of most direct interest to the farmers of the State. The Station is still organized in five departments—Chemical, Horticultural and Entomological, Farm, Veterinary, and Botanical—each being in charge directly of a professor, with expert assistance. The heads of these departments, with the President of the College, constitute the Station Council, approving all expenditures and publishing reports of results. The \$15,000 received annually from the United States treasury has been economically expended under the administration of these officers, and the results, as published in the annual reports and bulletins of the Station, have proved the effectiveness of the work.

The special work of the Chemical Department has been chiefly in the development of sorghum for sugar and the sugar beet. With reference to the latter, tests have been made of beet culture in more than a hundred places, covering half the counties of the State. Full reports of results, including thousands of analyses, have been published. No one can doubt the thoroughness of the test, so far as two or three seasons can give it. Experiments in horticulture have been chiefly tests of fruits and vegetables, and in entomology extensive study of the habits of injurious insects, with most approved methods of destroying them. The farm has been given up almost wholly to experiments, embracing tests of varieties of cereals, grasses, and forage plants, methods of seeding and culture, mode of feeding for beef production and for normal growth, including the use of ensilage, together with applica-

tion of manures and rotation of crops. The Veterinary Department, newly organized, has made some careful investigation of "staggers" in horses, and "lump-jaw" in cattle, and has begun some extensive work upon various contagious diseases and special causes of loss in domestic animals, like the corn-stalk disease and the loco. The Botanical Department has shown some decisive results in preventing smut in wheat and oats, which, if generally followed, might increase the value of products in the State by hundreds of thousands of dollars. It has also shown the effects of crossing corn by a great variety of tests, and has under way an extensive inquiry into the possible prevention of rust in cereals, as well as a general study of fungicides, with a view to combating all sorts of plant parasites.

Full reports of all completed experiments are published in bulletin form, and distributed to the farmers of the State, free of charge, whenever requested. Such publication involves a very considerable expense, and reduces the fund for actual experiment by several thousands annually. Without such publication the experiments would be of much less value, and it may be well for this State to provide, as others have done, for proper publication and distribution from the general fund of the State, with the sanction of the Secretary of the State Board of Agriculture.

FARMERS' INSTITUTES.

The College has taken part, during the past two winters, in 27 farmers' institutes, in nearly as many different counties. In most of these organizations have been formed for at least annual meetings, and it is evident that a general interest in institute work has been built up by this work of the College. From one to three professors of the College have been sent to each institute, the College bearing all expenses, on the ground that such meeting with the farmers of the State and an identification with their interests was a very proper way of enlarging the scope of usefulness of the College. The Board, however, has not felt at liberty to extend much further the expenditure in this direction, or to enlarge this work for the present, from fear of detracting from the interests of the College itself. Should the State see fit to organize a system of farmers' institutes, the College will be ready to contribute much toward their usefulness. It has refrained from entering into the so-called university-extension field, with a view to confining its energies to the farmers' need of instruction in agriculture and related sciences.

THE INCOME FUND.

The addition to the annual income fund provided by act of Congress, approved August 30, 1890, relieved all embarrassment as to the current needs of the College, and current expenses would have been amply met but for the announcement of the Attorney General that the law of 1883, concerning college funds, was unconstitutional. No funds have been drawn from the State treasury since October, 1891. This has seriously embarrassed the institution, and the Board have felt compelled to draw warrants upon the Treasurer

for the payment of salaries to the amount of several thousand dollars. These warrants will be met and canceled as soon as the funds are paid over by the State Treasurer. The College will then have a working surplus sufficient to meet all necessities during the semi-annual period when no interest is coming in. Such legislation is needed as will conform to the constitutional provision, and at the same time keep the funds available for the current expenses, as provided by act of Congress establishing the endowment.

THE ENDOWMENT.

A slight addition has been made to the amount of the endowment fund by the re-sale of forfeited real estate at a slightly advanced price. The total fund is now \$502,927.35. On November 1, 1892, it was invested as follows:

School bonds, 10 per cent.....	\$1,300 00	
School bonds, 7 per cent.....	24,289 50	
School bonds, 6 per cent.....	196,780 85	
School bonds, 5 per cent.....	1,000 00	\$223,370 35
Municipal bonds, 7 per cent.....	\$3,200 00	
Municipal bonds, 6 per cent.....	244,395 00	247,595 00
Land contracts, 10 per cent.....		9,339 47
Real-estate contracts, 8 per cent.....	\$1,500 00	
Real-estate contracts, 7 per cent.....	1,400 00	2,900 00
Warrants.....		16,812 43
Cash awaiting investment.....		2,910 10
Total.....		\$502,927 35

The report of the Loan Commissioner and the monthly statement of the Secretary, herewith printed, show that the fund has been carefully handled. The current account with the State Treasurer indicates that the interest on the securities has been paid quite as promptly as usual, and in many cases bonds have been paid several years before they were due. A few cases of delinquency reported by the Secretary show that occasionally there is slackness on the part of the officials, but none that requires immediate action. In most cases the deficiency has arisen because of the impossibility of making levies for the interest before the coupons became due. There are a few cases of forfeiture of contract upon lands. As there has been for several years no occasion for the services of a land agent, none has been appointed, because no one would be willing to give the required bond of \$40,000, with no services to render and no compensation to be received. It seems desirable that some legislation should provide for the performance of the duties of a land agent with reference to these few parcels of land by some other officer of the Board or of the State. The Loan Commissioner might be authorized, under his official bond, to make new contracts, under the laws relating to the duties of the Land Agent.

NEEDS FOR 1893-'95.

Buildings.—The College has been in serious need of additional buildings for several years past, as previous reports have indicated. Even less has been

asked in the past than was needed, because of the general depression in the State. And yet these needs have been constantly growing. There is no fit provision for the library of 13,000 volumes, either in the way of room to store the books or in space for readers. In an institution of this character, work of investigation and inquiry in scientific matters involves frequent reference to the working library, and although students are allowed freely to draw books for consultation at their rooms, the bulk of such consultation must be done in connection with the library itself. Moreover, the library is of such value that its protection becomes an essential part of economy. The time has come when the State should provide ample room for the library and its growth, in an essentially fire-proof building.

Unsatisfactory provision has so far been made for the study of the natural sciences in laboratory, class-rooms, and museums. While the equipment has been as good of its kind as could be expected from the age of the College, the quarters available for laboratory study have been cramped and crowded, so that the space hitherto assigned to zoölogy, botany and veterinary science is altogether insufficient. The rooms now assigned in the renovated "barn" are barely sufficient for the physiology and veterinary science. It seems therefore desirable that a separate, permanent building, with ample laboratories for botanical and zoölogical study, including sufficient cabinet room for museums, be provided. Such an addition at this time will barely make sufficient room for the increased number of classes made necessary by the growth of the College. It is now impossible to provide properly for all the classes that meet daily; and the natural growth of some of the departments is greatly hindered.

The Board again call attention to the need, several times mentioned, of a farm-house where some of the permanent employés may be boarded within easy reach of the stock and fields, which must be under constant oversight. There is also need, as has been noted for several years, of a piggery of such dimensions and permanence as will provide for the safe breeding of several breeds of swine at once. Provision should also be made, at as early a date as is practicable to meet the interests of the dairymen of the State, for a State dairy house, in which young men can be trained for successful butter and cheese making. Kansas is behind other States in the development of the dairy, and may well look to this outlay in general farming for improving the condition of the farming interests.

The College buildings are now heated by several distinct steam plants, all of which have been in use for nearly 10 years. They are, unfortunately, located under or in direct contact with the buildings heated; and the expense of attending them is greatly increased by the fact of considerable separation between the five sets of boilers located in the different buildings. At the earliest practicable moment, the State should insure both safety and economy by locating a complete heating system in an isolated building. From the location of the buildings, such a plant is in every way feasible, and should be

arranged for specially in connection with any additional buildings. Indeed, it would seem a serious waste to introduce any more separate systems.

General Repairs.—The sum appropriated by the last Legislature, \$1,000 per annum, for general repairs of buildings, including steam and water fittings, even with the utmost economy and delay of repairs needed for the complete preservation of the buildings, has proved insufficient. Aside from this fact, a severe hail storm in the spring of 1892 brought damage to the extent of \$400; in the way of broken windows. The result is, that the total appropriation for the year ending June 30, 1893, is already consumed; and incidental repairs for the remainder of the year should cost at least \$500. A larger appropriation will be needed for the next two years, for the reason that outside painting and internal repairs have been delayed for lack of means. At least \$1,500 annually should be appropriated for these purposes.

The incidental expenses in the care of funds, over and above the salary of the Loan Commissioner, provided by appropriation, have been \$172.75, which amount, according to the United States statute creating the College, must be paid by the State. Annual appropriations for the salary of the Loan Commissioner and for the annual water supply will be needed, as heretofore.

Feeling the extreme necessity of extending the College to meet the enlarged attendance and superior equipments which have been made possible by the national provision for annual support, the Board ask nothing except what the organic law of the College requires that the State itself should furnish. In this connection, attention is called to the fact previously mentioned, that all appropriations heretofore made by the State are represented in full by the present value of the College property. Few States in the Union have done less than Kansas in the way of appropriations to the land-grant institutions, and not one has received more in the advancement of the farming interests or in economical equipment and facilities for education or in repute among similar institutions.

In conclusion, the attention of the Governor and Legislature is called to the immediate needs of the College, with an appended summary of estimates of the actual wants of the College for the next two years. It is the hope of the Board that these wants may be carefully scrutinized and abundantly met.

Respectfully,

A. P. FORSYTH.
R. W. FINLEY.
JOSHUA WHEELER.
T. P. MOORE.
F. M. CHAFFEE.
R. P. KELLEY.
GEO. T. FAIRCHILD.

FINANCIAL REPORTS.

REPORTS OF LOAN COMMISSIONER.

To the Board of Regents—GENTLEMEN: I herewith hand you my report of investments made for the endowment fund of the State Agricultural College for the year ending June 30, 1891.

Invested in school bonds, 6 per cent.	\$8,200 00
“ municipal bonds 6 per cent.	28,200 00
Total	\$36,400 00

Respectfully submitted, T. P. MOORE, *Loan Commissioner*.
MANHATTAN, KAS., June 30, 1891.

To the Board of Regents—GENTLEMEN: I herewith submit my report of investments made for the endowment fund of the State Agricultural College for the year ending June 30, 1892.

Invested in school-district bonds, 6 per cent.	\$7,950 00
“ municipal “ 6 “	10,958 98
“ pay-roll warrants, 6 “	9,483 52
Total	\$28,392 50

Respectfully submitted, T. P. MOORE, *Loan Commissioner*.
HOLTON, KAS., June 30, 1892.

TREASURER'S REPORTS.

To the Board of Regents: GENTLEMEN—Herewith find my report for the year ending June 30, 1891.

INTEREST ACCOUNT.

Received from State Treasurer, interest.	\$27,875 00
“ “ “ “ act of Congress, August, 1890.	31,000 00
“ “ Executive Department.	35 00
“ “ Farm “	3,593 96
“ “ Horticultural “	877 63
“ “ Chemical “	283 36
“ “ Mechanical “	1,727 54
“ “ Printing “	243 60
“ “ Telegraph “	249 50
“ “ Domestic “	305 85
“ “ Sewing “	7 50
“ “ Botanical “	346 15
“ “ Refunding appropriation.	216 75
Total	\$66,761 84
Due Treasurer, July 1, 1890.	\$3,968 79
Paid approved vouchers, July 1, 1890, to June 30, 1891.	50,963 24
Balance on hand, July 1, 1891.	\$11,809 81
Unpaid notes receivable.	360 00

APPROPRIATIONS, 1890-'91.

<i>Library.</i>	
Received from State Auditor	\$1,000 00
Paid approved vouchers	1,000 00
<i>Museum.</i>	
Received from State Auditor	500 00
Paid approved vouchers	500 00
<i>General Repairs.</i>	
Received from State Auditor	1,000 00
Paid approved vouchers	1,000 00
<i>Heat and Lighting.</i>	
Received from State Auditor	200 00
Paid approved vouchers	200 00
<i>Furniture.</i>	
Received from State Auditor	500 00
Paid approved vouchers	500 00
<i>Farm.</i>	
Received from State Auditor	200 00
Paid approved vouchers	200 00
<i>Chemical.</i>	
Received from State Auditor	300 00
Paid approved vouchers	300 00
<i>Horticultural.</i>	
Received from State Auditor	500 00
Paid approved vouchers	500 00
<i>Mechanical.</i>	
Received from State Auditor	500 00
Paid approved vouchers	500 00
<i>Printing.</i>	
Received from State Auditor	250 00
Paid approved vouchers	250 00
<i>Physics.</i>	
Received from State Auditor	500 00
Paid approved vouchers	500 00
<i>Water Supply.</i>	
Received from State Auditor	300 00
Paid approved vouchers	300 00
<i>Loan Commissioner.</i>	
Received from State Auditor	300 00
Paid approved vouchers	300 00
<i>Freight on Coal.</i>	
Received from State Auditor	1,348 50
Paid approved vouchers	1,348 50
<i>Care of Funds.</i>	
Received from State Auditor	216 75
Paid approved vouchers	216 75
<i>Iron Shop.</i>	
Received from State Auditor	1,269 57
Paid approved vouchers	1,269 57

Respectfully submitted, JOHN E. HESSIN, *Treasurer.*

MANHATTAN, KAS., June 30, 1891.

To the Board of Regents: GENTLEMEN—Herewith is submitted my report for the period from July 1, 1891, to April 30, 1892.

INTEREST ACCOUNT.

Balance on hand July 1, 1891.....	\$11,809 81
Received from State Treasurer, interest.....	11,035 00
“ “ “ “ act of Congress, August, 1892.....	17,000 00
“ “ Executive Department.....	34 54
“ “ Farm “ “.....	2,276 54
“ “ Horticultural “ “.....	313 28
“ “ Mechanical “ “.....	1,205 48
“ “ Printing “ “.....	170 88
“ “ Physics “ “.....	13 60
“ “ Domestic “ “.....	150 45
“ “ Botanical “ “.....	290 49
Total.....	\$44,300 07
Paid approved vouchers, July 1, 1891, to April 30, 1892.....	42,937 24
Balance, April 30, 1892, paid to Joshua Wheeler, successor.....	\$1,362 83
Pay-roll warrants not paid for lack of funds.....	\$2,488 35

APPROPRIATIONS, 1891-'92.

<i>Repairing Roofs.</i>	
Received from State Auditor.....	\$2,050 00
Paid approved vouchers.....	2,050 00
<i>Sewers.</i>	
Received from State Auditor.....	3,000 00
Paid approved vouchers.....	3,000 00
<i>Iron Shop.</i>	
Received from State Auditor.....	2,730 43
Paid approved vouchers.....	2,730 43
<i>General Repairs.</i>	
Received from State Auditor.....	805 29
Paid approved vouchers.....	805 29
<i>Water Rates.</i>	
Received from State Auditor.....	133 72
Paid approved vouchers.....	133 72
<i>Salary of Loan Commissioner.</i>	
Received from State Auditor.....	100 00
Paid approved vouchers.....	100 00
<i>Library.</i>	
Received from State Auditor.....	204 20
Paid approved vouchers.....	204 20

Respectfully submitted,
MANHATTAN, KAS., April 30, 1892.

JNO. E. HESSIN, *Treasurer.*

To the Board of Regents — GENTLEMEN: Herewith is submitted my report for the period from May 1 to June 30, 1892:

INTEREST ACCOUNT.

Received from Executive Department.....	\$26 34
“ “ Farm “	1,748 11
“ “ Horticultural “	213 91
“ “ Chemical “	84 50
“ “ Mechanical “	377 55
“ “ Printing “	77 55
“ “ Domestic “	111 45
“ “ Botany “	41 23
“ “ Library “	45 80
“ “ Veterinary “	1 78
“ “ John E. Hessin, Treasurer.....	1,362 83
Total.....	\$4,041 05
Paid approved vouchers, May 1 to June 30, 1892.....	1,885 62
Balance on hand, July 1, 1892.....	\$2,205 43
Pay-roll warrants not paid for want of funds.....	\$13,082 53

APPROPRIATIONS, 1891-'92.

<i>General Repairs.</i>	
Received from State Auditor.....	\$194 71
Paid approved vouchers.....	194 71
<i>Water Rates.</i>	
Received from State Auditor.....	191 27
Paid approved vouchers.....	191 27
<i>Library.</i>	
Received from State Auditor.....	45 80
Paid approved vouchers.....	45 80
<i>Salary of Loan Commissioner.</i>	
Received from State Auditor.....	100 00
Paid approved vouchers.....	100 00

Respectfully submitted.

JOSHUA WHEELER, *Treasurer.*

MANHATTAN, KAS., June 30, 1892.

SECRETARY'S REPORT.

To the Board of Regents:

GENTLEMEN — Herewith are presented, in concise tabular form, transcripts from the books of this office, showing the condition of the endowment fund at the close of each month, the sources of income each year, the summary of the annual inventory, and the expenditures and receipts of each College department for the years ending June 30, 1891, and June 30, 1892. There are also added, as required by law, explicit statements of the items of expenditure under special appropriations for the same year.

Full ledger accounts of the invested funds, showing the exact condition in each investment of every kind, are kept from data furnished through triplicate receipts by the State Treasurer, after original entry of each bond purchased, as to both principal and coupons. Accounts are also kept with the State Treasurer and the College Treasurer, the several departments of the College, special appropriations, and the distinct funds in charge of the Board of Regents. Vouchers for all expenditures, in duplicate and triplicate, and duplicate receipts for all cash received, with all general accounts, have been carefully audited, as you are aware, by the Board of Regents at the regular quarterly meetings, and the final summary has been carefully tested by

comparison of the reports of other officers herewith presented. All papers are filed, readily accessible to any one inquiring into the financial condition of the College.

A separate account is kept with the Experiment Station in both the Secretary's and Treasurer's offices. A transcript of each is published in the annual report of the Station. This report is submitted to the Governor on the 1st day of February in each year.

Trusting that this report will be found in all respects correct and satisfactory, it is respectfully submitted for your consideration.

GEORGE T. FAIRCHILD, *Secretary.*

I. D. GRAHAM, *Assistant Secretary.*

COLLEGE, June 30, 1892.

SOURCES OF INCOME, 1890-'91.

<i>Through State Treasurer.</i>	
Payment of U. S. Treasurer, act of Congress, August, 1890.....	\$31,000 00
Interest on school bonds, 10 per cent.....	85 00
“ “ “ 7 “.....	2,581 67
“ “ “ 6 “.....	12,416 05
“ “ “ 5 “.....	30 00
“ municipal bonds, 10 per cent.....	370 00
“ “ “ 8 “.....	400 00
“ “ “ 7 “.....	224 00
“ “ “ 6 “.....	11,145 00
“ real-estate securities, 8 per cent.....	120 00
“ land contracts, 10 per cent.....	953 54
“ delinquent interest.....	439 43
Total.....	\$59,764 69
<i>College Departments.</i>	
Appropriations, care of funds, 1889-'90.....	\$216 75
Special fees from students.....	627 25
Sales of produce, stock, etc.....	3,510 43
Labor and materials for repairs, etc.....	1,373 18
Labor and materials for Station.....	2,159 23
Total.....	\$7,886 84
Through State Treasurer.....	59,764 69
Grand total.....	\$67,651 53

SOURCES OF INCOME, 1891-'92.

<i>Through State Treasurer.</i>	
Payment from U. S. Treasurer, act of Congress, August, 1890.....	\$17,000 00
Interest on school bonds, 10 per cent.....	246 15
“ “ “ 7 “.....	2,326 97
“ “ “ 6 “.....	8,969 16
“ “ “ 5 “.....	55 00
“ municipal bonds, 10 per cent.....	370 00
“ “ “ 8 “.....	400 00
“ “ “ 7 “.....	314 00
“ “ “ 6 “.....	15,924 30
“ real-estate securities, 8 per cent.....	112 00
“ on land contracts, 10 “.....	715 40
“ delinquent interest.....	220 85
Total.....	\$46,653 83
<i>College Departments.</i>	
Sales of stock, etc.....	\$4,027 23
Special fees from students.....	92 25
Labor and materials in repairs, etc.....	1,407 43
“ “ “ for Station.....	1,663 37
Refunded items.....	13 20
Total.....	\$7,203 48
Through State Treasurer.....	46,653 83
Grand total.....	\$53,857 31

CURRENT EXPENSE AND IMPROVEMENT FUNDS.
SECRETARY'S ACCOUNT OF RECEIPTS AND EXPENDITURES, 1890-91.

DEPARTMENTS.	EXPENDITURES.				RECEIPTS.			ACTUAL EXPENSE.	ACTUAL PROCEEDS.
	State appropriations.	Income fund.	Department transfers.	Inventory decrease.	Cash.	Department transfers.	Inventory increase.		
Instruction.....		\$20,860 37						\$20,860 37	
Executive.....	\$4,618 07	4,825 88	\$1,210 13		*\$1,635 00	\$63 59	\$859 94	8,095 55	
Farm.....	200 00	5,250 96	55 13	\$311 45	3,593 96	80 22		2,261 02	
Horticultural.....	500 00	4,372 19	476 32		877 63	500 00	823 68	3,147 20	
Chemical.....	300 00	430 26	30 76		283 36	10 90		326 06	
Mechanical.....	200 00	6,335 35	9 87		1,727 54	955 46	2,177 40	1,686 82	
Printing.....	250 00	1,301 93	48 19		243 60	282 80	131 62	942 10	
Botany.....		1,344 77	54 53		346 15		944 35	108 80	
Domestic.....		477 65	83 80		305 85		110 89	67 11	
Sewing.....		60 13	6 80		7 50		1 75	57 68	
Library.....	1,000 00	1,275 25	169 23				2,736 07	\$291 50	
Physics and Telegraph.....	500 00	480 25	56 81		249 50		45 53	742 13	
Industrial Art.....		134 64	31 45				15 80	130 29	
Music.....		638 50	3 00				557 00	104 50	
Mathematical.....		274 50					201 50	73 00	
English.....		37 33	1 25	90				39 48	
History.....		24 85	3 40					28 25	
Military.....		203 85	2 60					57 45	
Physiology and Veterinary.....	500 00	327 79	15 64						24 33
Loan.....	300 00	5 35							
Treasury.....		2,241 44		8 75	59,308 50	366 00	501 76	305 35	
Totals.....		\$50,963 24	(\$2,258 97)	\$321 10	\$68,576 50	(\$2,258 97)	\$9,385 88	\$39,053 16	\$57,374 23
In State treasury.....	\$8,368 07						925 27		925 27
Grand totals.....				59,652 41			78,909 77	39,053 16	\$58,299 50
Balance.....				19,246 34				19,246 34	

* Sale of real estate for endowment.

CURRENT EXPENSE AND IMPROVEMENT FUNDS.
SECRETARY'S ACCOUNT OF RECEIPTS AND EXPENDITURES, 1891-'92.

DEPARTMENTS.	EXPENDITURES.					RECEIPTS.		ACTUAL EXPENSE.	ACTUAL PROCEEDS.
	State appropriations.	Income fund.	Department transfers.	Inventory decrease.	Cash.	Department transfers.	Inventory increase.		
Instruction.....	\$9,105 42	\$24,844 61	\$684 94	.....	\$60 88	.....	.....	\$24,844 61	.....
Executive.....	5,740 49	116 69	.....	4,024 65	\$46 67	\$6,616 92	8,806 38	.....
Farm.....	6,195 39	263 43	\$551 45	527 19	73 70	.....	2,835 96	.....
Horticultural.....	4,183 17	138 89	.....	84 50	.....	943 68	2,975 73	.....
Chemical.....	931 75	15 48	.....	1,583 03	.....	666 55	319 59	.....
Mechanical.....	10,073 70 *	14 39	.....	248 43	1,094 96	5,866 24	2,604 95	.....
Printing.....	1,252 88	8 37	14 33	331 72	247 27	246 52	525 05	.....
Botany.....	581 94	115 84	.....	261 90	.....	126 41	272 92	.....
Domestic.....	499 59	8 77	.....	.....	.....	76 50	156 34	.....
Sewing.....	115 18	32 35	.....	45 80	.....	1,414 95	47 45	.....
Library.....	250 00	850 45	30 76	.....	13 60	95 30	18 30	122 92	\$327 95
Physics and Telegraph.....	246 47	3 65	.....	.....	.....	.....	145 28	.....
Industrial Art.....	92 82	1 90	21 70	.....	.....	12 73	42 84	.....
Music.....	53 67	.....	.....	.....	.....	.....	67 02	.....
Mathematics.....	66 42	.....	.....	.....	.....	.....	.....	.....
English.....	13 65	55	.....	.....	.....	15 05	23 26	.....
History.....	23 26	.....	.....	.....	.....	.....	192 76	.....
Military.....	189 11	3 65	.....	.....	.....	.....	46 41	.....
Physiology and Veterinary.....	458 44	49 64	.....	1 78	2 00	457 89	609 95	.....
Loan.....	200 00	409 95	.....	.....	.....	.....	.....	.....	.....
Treasury.....	82 45	10 00	115 28	28,035 00	.....	.....	.....	27,827 27
Totals.....	\$9,555 42	\$57,905 39	(\$1,439 90)	\$702 76	\$35,218 48	(\$1,499 90)	\$16,461 74	\$44,639 42	\$28,156 07
In State treasury.....	19,544 10	.....	19,544 10
Grand totals.....	68,163 57	.....	.....	71,230 32	44,639 42	\$47,700 17
Balance.....	3,060 75	.....	.....	.....	3,060 75	.....

ENDOWMENT FUND — MONTHLY BALANCES, 1890-'91.

MONTHS.	SCHOOL BONDS.				MUNICIPAL BONDS.				Land contracts.	REAL-ESTATE SECURITIES.		Cash.	War-rants, pay-roll, 6 per cent.	ENDOWMENT.	
	5 per cent.	6 per cent.	7 per cent.	10 per cent.	10 per cent.	8 per cent.	7 per cent.	6 per cent.		8 per cent.	7 per cent.			Total.	Pro-ductive.
July.....	\$1,200	\$199,803 00	\$45,581 90	\$1,935	\$3,700	\$5,000	\$3,200	\$224,500	\$13,046 27	\$1,500	.....	\$620 16	.....	\$500,086 33	\$499,466 17
August.....	1,200	200,374 91	41,368 44	1,920	3,700	5,000	3,200	225,500	13,046 27	1,500	.....	3,276 71	.....	500,086 33	496,809 62
September....	1,200	200,374 91	41,368 44	1,920	3,700	5,000	3,200	225,500	11,769 47	1,500	.....	4,553 51	.....	500,086 33	495,532 82
October.....	1,200	200,874 91	41,368 44	1,920	3,700	5,000	3,200	225,500	11,399 47	1,500	.....	4,423 51	.....	500,086 33	495,692 82
November.....	1,200	200,874 91	41,368 44	1,800	3,700	5,000	3,200	225,500	11,219 47	1,500	.....	4,793 51	.....	500,086 33	495,362 82
December.....	1,200	202,674 91	41,268 44	1,800	3,700	5,000	3,200	225,500	10,739 47	1,500	.....	3,963 51	.....	500,086 33	496,362 82
January.....	1,200	204,285 89	37,708 00	1,800	3,700	5,000	3,200	224,500	10,649 47	1,500	.....	6,642 97	.....	500,086 33	493,643 36
February.....	1,200	203,955 89	37,708 00	1,800	3,700	5,000	3,200	224,500	10,649 47	1,500	.....	82 97	.....	500,086 33	493,213 36
March.....	1,200	203,955 89	37,708 00	1,800	3,700	5,000	3,200	231,500	10,439 47	1,500	.....	82 97	.....	500,086 33	500,003 36
April.....	1,200	203,955 89	37,708 00	1,800	3,700	5,000	3,200	231,500	10,439 47	1,500	.....	82 97	.....	500,086 33	500,003 36
May.....	1,200	203,755 89	35,504 50	1,600	3,700	5,000	3,200	233,500	10,439 47	1,500	.....	686 47	.....	500,086 33	499,399 86
June.....	1,200	198,676 89	35,179 50	1,500	3,700	5,000	3,200	238,500	10,349 47	1,500	.....	1,280 47	.....	500,086 33	498,805 86

ENDOWMENT FUND — MONTHLY BALANCES, 1891-'92.

MONTHS.	SCHOOL BONDS.				MUNICIPAL BONDS.				Land contracts.	REAL-ESTATE SECURITIES.		Cash.	War-rants, pay-roll, 6 per cent.	ENDOWMENT.	
	5 per cent.	6 per cent.	7 per cent.	10 per cent.	10 per cent.	8 per cent.	7 per cent.	6 per cent.		8 per cent.	7 per cent.			Total.	Pro-ductive.
July.....	\$1,000	\$193,360 25	\$30,759 50	\$1,500	\$3,700	\$5,000	\$3,200	\$237,500	\$10,349 47	\$1,500	.....	\$12,217 11	.....	\$500,086 33	\$487,869 22
August.....	1,000	193,401 87	30,659 50	1,500	3,700	5,000	3,200	247,805	10,349 47	1,500	.....	3,211 51	.....	501,327 35	498,115 84
September....	1,000	196,001 87	30,359 50	1,500	3,700	5,000	3,200	249,700	10,349 47	1,500	.....	983 49	.....	501,327 35	502,310 84
October.....	1,000	196,001 87	30,359 50	1,500	3,700	5,000	3,200	249,700	9,969 47	1,500	.....	603 49	.....	501,327 35	501,930 84
November.....	1,000	195,845 93	30,159 50	1,500	3,700	5,000	3,200	249,700	9,969 47	1,500	.....	247 55	.....	501,327 35	501,574 90
December.....	1,000	194,295 93	30,159 50	1,500	3,700	5,000	3,200	249,700	9,969 47	1,500	.....	1,302 45	.....	501,327 35	500,924 90
January.....	1,000	191,976 93	29,709 50	1,500	3,700	5,000	3,200	249,700	9,969 47	1,500	.....	6,771 45	.....	502,927 35	496,155 90
February.....	1,000	190,501 62	29,709 50	1,500	3,000	2,500	3,200	249,395	9,969 47	1,500	.....	9,351 76	.....	502,927 35	498,675 39
March.....	1,000	190,101 62	29,209 50	1,500	3,000	2,500	3,200	249,395	9,969 47	1,500	.....	10,151 76	.....	502,927 35	492,775 39
April.....	1,000	190,901 62	29,209 50	1,500	3,000	2,500	3,200	249,395	9,969 47	1,500	.....	6,863 41	\$2,488 35	502,927 35	496,063 94
May.....	1,000	190,501 62	29,209 50	1,500	.....	2,500	3,200	249,395	9,969 47	1,500	.....	6,701 12	6,050 64	502,927 35	496,226 23
June.....	1,000	189,101 62	27,609 50	1,500	.....	2,500	3,200	249,395	9,939 47	1,500	.....	7,098 24	9,483 52	502,927 35	495,829 11

DELINQUENT DISTRICTS.—(December 1, 1892).

COUNTIES.	Dis- tricts.	Bonds.	Coupon s.
Allen	17		\$5 70
Barber (Kiowa).....			22 50
Barber (Sun City, twp. bridge).....			69 00
Chautauqua	128	\$600 00	
Cherokee	3	248 23	
Elk	155	100 00	
Elk and Wilson	103	100 00	
Graham.....	44	241 62	
Jewell	61	50 00	
Jewell	64	30 00	
Morris.....	62	100 00	
Morris.....	73		60 00
Morris.....	73		15 00
Osage (city of Scranton)			150 00
Reno (Nickerson city)			210 00
Riley	15		10 00
Riley	32		15 00
Riley	39		28 80
Riley	41		12 00
Riley	47		62 01
Riley	70		24 00
Riley	71		9 00
Riley and Washington, joint.....	14	100 00	15 00
Riley and Washington, joint.....	15	140 00	
Sedgwick	125		17 50
Smith.....	39	25 00	
Smith.....	75	24 00	
Stafford.....	1		3 36
Stafford.....	5	125 00	
Stafford (refunding).....	10		18 00
Stafford.....	11	200 00	7 00
Stafford.....	14	380 00	
Stafford.....	15	250 00	
Stafford.....	27		15 00
Totals		\$2,713 85	\$768 87

DELINQUENT CONTRACTS.

NAME.	Description.	Principal.	Interest.
Bullock & Baker.....	N. E. 19-14-1	\$1,400	\$280
Bullock & Baker.....	N. W. 20-14-1	1,295	259
Bullock & Baker.....	S. W. 20-14-1	1,330	266
C. E. Gifford, assigned to Wm. Docking.....	S. E. 12-10-5	1,260	252
J. Hicks	N. W. 20-12-17	200	140

SPECIAL APPROPRIATIONS.

ITEMIZED STATEMENT OF EXPENDITURES, 1890-'91.

Additions to the Library.		
Rural Publishing Company, periodicals.....		\$1 00
Wm. Wesley & Son, books.....		41 90
Geo. N. Curtis, books.....		3 50
Houghton, Mifflin & Co., books.....		2 00
W. A. Kellerman, books.....		13 81
Dudley Ginch, books.....		1 75
C. E. Bartholomew, books.....		1 50
H. Williams, books.....		99 67
Ireland Publishing Company, periodicals.....		4 00
D. G. Francis, books.....		63 00
S. M. Fox, books.....		393 74
American Entomological Society, periodical.....		12 00
W. C. Armor, books.....		10 50
Chas. L. Webster & Co., books.....		3 00
Dunlan & Co., books.....		35 70
Mangen Printing Company, periodical.....		2 00

SPECIAL APPROPRIATIONS — CONTINUED.

ITEMIZED STATEMENT OF EXPENDITURES, 1890-'91 — *Continued.*

<i>Additions to the Library — Concluded.</i>	
Wm. F. Clay, books.....	\$27 93
L. M. Knight, books.....	2 00
E. A. Popenoe, books.....	1 50
E. S. Stewart, books.....	6 50
Botanical Gazette, periodical.....	5 75
John Wheldon, books.....	80 37
F. P. Harper, books.....	4 24
Bookmart Publishing Company, books.....	2 00
David G. Francis, ".....	7 82
Walter A. Weaver, ".....	51 35
R. B. Spilman, ".....	6 35
Ira Mayhew & Co., ".....	1 50
Boston Book Company, ".....	2 35
N. P. James, ".....	3 45
Mrs. E. Barnard, ".....	7 50
W. M. Patton, ".....	65
Kansas Farmer Company, periodicals.....	35
H. C. Maercker, books.....	7 75
J. W. Embree, ".....	4 50
American Meteorological Journal, periodical.....	5 66
S. H. Chadbourne, book.....	4 11
S. C. Mason, book.....	1 40
Library Bureau, library supplies.....	6 00
Geo. W. Crane & Co., library supplies.....	2 00
John E. Hessin, book.....	3 00
Wm. Beer, book.....	6 50
Kegan, Paul, Trench, Truber & Co., (limited,) book.....	2 50
University of Kansas, book.....	11 00
G. E. Hopper, book.....	5 25
Jordan Bros., book.....	27 90
Publishers' Weekly, periodical.....	7 50
C. W. Shepard, book.....	4 25
Total.....	\$1,000 00
<i>Cases and Collections for the General Museum.</i>	
Campbell & Cutler Company, glass.....	\$76 00
A. D. Woodruff, labor.....	50 00
Yale & Towne Manufacturing Company, locks.....	31 50
Mechanical Department, labor and supplies.....	342 50
Total.....	\$500 00
<i>General Repairs.</i>	
Campbell & Cutler Company, materials.....	\$111 32
I. D. Graham, freight.....	25 74
A. D. Woodruff, labor.....	156 68
S. M. Fox, paper.....	17 29
R. N. Wycoff, drayage.....	35
Thos. Kane & Co., seats.....	4 80
Michigan Radiator Company, hardware.....	13 56
H. O. Palen & Co., blackboards.....	36 00
H. V. Rudy, labor.....	80
Ripley & Bronson, hardware.....	21 90
Mechanical Department, labor and supplies.....	546 78
H. D. Huxley, labor.....	6 45
Crane & Co., paint.....	2 70
G. W. Higinbotham, lime and cement.....	18 75
E. F. Gundaker, labor.....	16 90
Aug. Blasing, labor.....	8 38
I. Williston, stone.....	11 60
Total.....	\$1,000 00
<i>Heating and Lighting Apparatus.</i>	
Crane & Co., apparatus.....	\$200 00
<i>Furniture.</i>	
T. Willard, matting.....	\$6 50
John Schaefer, mirrors.....	18 00
S. M. Fox, furniture.....	3 75
W. H. Bower, furniture.....	60 00
North, Orrison & Co., furniture.....	76 50
Crane & Co., furniture.....	4 90
Bullene, Moore, Emery & Co., furniture.....	6 00
I. D. Graham, freight.....	5 42

SPECIAL APPROPRIATIONS—CONTINUED.

ITEMIZED STATEMENT OF EXPENDITURES, 1890-'91—Concluded.

<i>Furniture—Concluded.</i>	
Reed & Son, furniture.....	\$130 75
Stevenson & Peckham, furniture.....	71 16
Ballard & Murdock, furniture.....	29 90
Thos. Kane & Co., seat-bottoms.....	4 80
Wyckoff, Seamans & Benedict, furniture.....	60 00
Mechanical Department, labor and supplies.....	22 32
Total.....	\$500 00
<i>Fencing and Tools in Farm Department.</i>	
F. Barteldes & Co., implements.....	\$22 00
Keystone Implement Company, implements.....	52 45
I. D. Graham, freight.....	5 93
Wayne Works, implements.....	24 00
Harrington & King Perforating Company, implements.....	2 25
E. B. Purcell & Co, implements.....	93 37
Total.....	\$200 00
<i>Chemical Apparatus and Mineral Collections.</i>	
Ward & Howell, minerals.....	\$300 00
<i>Tools, Cases and Apparatus for Horticultural Department.</i>	
Moline Plow Company, implements.....	\$30 10
I. D. Graham, freight.....	91
Campbell & Cutler Company, glass, in cases.....	10 51
Mechanical Department, materials and labor, cases.....	458 48
Total.....	\$500 00
<i>Tools and Models in Mechanical Department.</i>	
E. D. Albro & Co., tools.....	\$6 20
Simonds Rolling-Machine Company, tools.....	2 03
Chas. H. Besley & Co., ".....	30 17
Cary & Moen Company, ".....	2 40
C. W. de Count, ".....	5 15
F. L. Rider, ".....	2 20
Shipman Engine Company, machinery.....	148 75
Mechanical Department, labor on tools.....	3 10
Total.....	\$200 00
<i>Type, Cases and Apparatus in Printing Department.</i>	
Union Type Foundry, type.....	\$225 89
Geo. T. Fairchild, type.....	9 70
John E. Hessin, freight.....	5 13
Hamilton Manufacturing Company, tools.....	3 31
A. Zeese & Co., tools.....	4 32
I. D. Graham, freight.....	1 65
Total.....	\$250 00
<i>Water Supply.</i>	
City of Manhattan, Kas., water.....	\$300 00
<i>Salary Loan Commissioner.</i>	
T. P. Moore.....	\$300 00
<i>Freight and Hauling of Coal.</i>	
John E. Hessin, freight.....	\$442 56
C. A. Carlton, hauling.....	189 89
David Hood, hauling.....	10 42
I. D. Graham, freight.....	705 63
Total.....	\$1,348 50
<i>Apparatus in Physics Department.</i>	
Geo. T. Fairchild, freight.....	\$1 65
Elmer & Amend, apparatus.....	68 00
John E. Hessin, freight.....	2 75
Gate City Electric Company, apparatus.....	3 00
J. W. Queen & Co., apparatus.....	412 60
McIntosh Battery and Optical Apparatus.....	12 00
Total.....	\$500 00
<i>Incidental Expenses in Care of Funds, 1889-'90.</i>	
S. M. Fox, stationery.....	\$12 65
Robt. Keith, desk.....	63 45
T. P. Moore, postage and stationery.....	10 25
Green & Hessin, rent of office.....	125 00
John E. Hessin, postage.....	5 40
Total.....	\$216 75

SPECIAL APPROPRIATIONS—CONCLUDED.

ITEMIZED STATEMENT OF EXPENDITURES, 1891-'92.

<i>Renewal of Roofs.</i>		
Cartright Metal Roofing Company, materials.....	\$1,937 64	
R. T. McCamon, hauling.....	8 50	
Campbell, Cutler & Co., paints.....	39 71	
Mechanical Department, labor.....	64 15	
Total.....	\$2,050 00	
<i>Sewers.</i>		
J. W. Nier, plans.....	\$65 00	
Kansas City Journal Company, advertising.....	4 20	
Kansas City Star, advertising.....	4 20	
John E. Hessin, express.....	11 20	
G. E. Hopper, contract.....	2,915 40	
Total.....	\$3,000 00	
<i>General Repairs, including Steam Fitting.</i>		
R. B. Sarber, sand.....	\$3 00	
I. D. Graham, freight.....	3 25	
Cartright Metal Roofing Company, nails.....	7 75	
Mechanical Department, materials and labor.....	812 14	
A. J. Whitford, hardware.....	7 20	
A. D. Woodruff, painting and papering.....	6 25	
Campbell & Cutler Company, glass.....	1 90	
S. M. Fox, paper.....	38 94	
George T. Fairchild, express.....	79	
J. M. Root & Co., stone cutting.....	1 25	
George E. Hopper, labor and materials.....	117 53	
Total.....	\$1,000 00	
<i>Water Supply.</i>		
City of Manhattan.....	\$324 99	
<i>Salary Loan Commissioner.</i>		
T. P. Moore.....	\$200 00	
<i>Library.</i>		
C. M. Weed, books.....	\$1 25	
Mrs. Albert Griffin, books.....	15 00	
H. Williams, books.....	9 60	
E. T. Cresson, books.....	4 00	
Subscription News Company, periodicals.....	174 35	
Library Department, books.....	45 80	
Total.....	\$250 00	

SUMMARY OF GENERAL COLLEGE INVENTORY, JUNE 30, 1891.

<i>Executive Department.</i>		
Farm, grounds, dwellings, and water-works.....	\$49,600 00	
College Hall.....	77,100 00	
Armory.....	10,950 00	
Mechanics' Hall.....	7,000 00	
Horticultural Hall.....	4,200 00	
Chemical Laboratory.....	9,600 00	
In College Hall.....	2,290 64	
Armory.....	24 90	
Mechanics' Hall.....	136 92	
Horticultural Hall.....	127 50	
Chemical Laboratory.....	61 76	
President's office.....	1,076 16	
Vault.....	70 75	
Secretary's office.....	678 25	
Chapel stage.....	165 00	
Reception room.....	300 00	
Roofing slate on hand.....	175 00	
		\$163,556 88
<i>Chemical Department.</i>		
Analytical tables, with water, gas, etc.....	\$1,282 00	
Chemicals.....	242 55	
Chemical apparatus.....	3,073 95	
Platinum ware, wire, etc.....	117 60	
Mineral collection.....	1,523 25	
Cases for minerals and apparatus.....	1,083 30	
Office furniture and supplies.....	161 05	
		7,483 60

SUMMARY OF GENERAL COLLEGE INVENTORY, JUNE 30, 1891—CONTINUED.

<i>Horticultural Department.</i>		
Plantations	\$2,210 00	
Greenhouse and stock	4,211 00	
Greenhouse and lawn, tools and supplies	184 58	
Horses and horse tools	497 25	
Hand garden tools and fixtures	422 82	
Workshop tools	43 75	
Office furniture and apparatus	2,851 74	
Supplies on hand	486 82	
Stone barn	1,000 00	
		\$11,907 96
<i>Botanical Department.</i>		
Microscopes and accessories	\$1,369 75	
Furniture and cases	395 35	
Supplies	434 50	
General herbarium	562 80	
Kansas herbarium	564 40	
Cryptogamic herbarium	38 90	
Herbarium duplicates	75 00	
Tools and apparatus	15 00	
		3,455 70
<i>Mathematical Department.</i>		
Surveying apparatus	\$1,262 65	
Mathematical apparatus	31 75	
		1,294 40
<i>Industrial Art Department.</i>		
Furniture, models, and apparatus	\$1,422 21	
		1,422 21
<i>English Department.</i>		
Cyclostyle	\$15 00	
		15 00
<i>Domestic Department.</i>		
Kitchen apparatus	\$506 89	
Dairy apparatus	197 25	
		704 14
<i>Sewing Department.</i>		
Machines	\$240 00	
Cases and apparatus	347 20	
		587 20
<i>Mechanical Department.</i>		
Tools and machines—wood shops	\$7,897 94	
Tools and machines—iron shops	621 56	
		8,519 50
<i>Musical Department.</i>		
Instruments	\$1,712 72	
Furniture, etc	63 15	
		1,775 87
<i>Printing Department.</i>		
Presses and paper cutter	\$1,457 00	
Type, cases, stands, and stock	2,386 41	
Office furniture	138 35	
Accounts receivable	26 50	
		4,008 26
<i>History and Constitutional Law.</i>		
Maps, charts, etc	\$62 39	
		62 39
<i>Farm Department.</i>		
Buildings	\$10,730 00	
Work horses	325 00	
Cattle—Short-horns	3,575 00	
Polled Angus	1,450 00	
Jerseys	550 00	
Herefords	650 00	
Holsteins	600 00	
Swine—Berkshires	330 00	
Poland Chinas	335 00	
Sheep—Shropshires	140 00	
Machinery and tools	2,888 60	
Office fixtures	203 00	
Miscellaneous farm tools	273 15	
Wells, fences, etc	1,716 50	
Crops in ground and barn	1,942 00	
		25,708 25
<i>Military Department.</i>		
Cases, tools, etc	\$113 70	
Uniforms	924 72	
		1,038 42
<i>Museum and Veterinary Department.</i>		
Zoölogical collection	\$1,413 75	
Scientific club donations	121 00	
Geological collection	1,297 00	
Models and specimens in anatomy	749 29	
Cases and apparatus	2,489 70	
Indian ornaments	8 00	
		6,078 74

SUMMARY OF GENERAL COLLEGE INVENTORY JUNE 30, 1891—CONCLUDED.

<i>Physics Department.</i>		
General physics apparatus.....	\$373 45	
Sound apparatus.....	106 85	
Heat apparatus.....	251 15	
Meteorological apparatus.....	171 85	
Light apparatus.....	470 30	
Electrical apparatus.....	1,366 55	
Cases, tables, etc.....	597 00	
Telegraphic apparatus.....	493 75	
		\$3,830 90
<i>Library Department.</i>		
Books, pamphlets, etc.....	\$18,638 50	
Furniture.....	696 35	
Card catalogue.....	1,952 00	
Binders, cases, etc.....	163 85	
		21,450 70
<i>Treasury Department.</i>		
Note.....	\$135 00	
Office furniture and supplies.....	71 45	
		206 45
Grand total.....		\$263,106 57

SUMMARY OF GENERAL COLLEGE INVENTORY, JUNE 30, 1892.

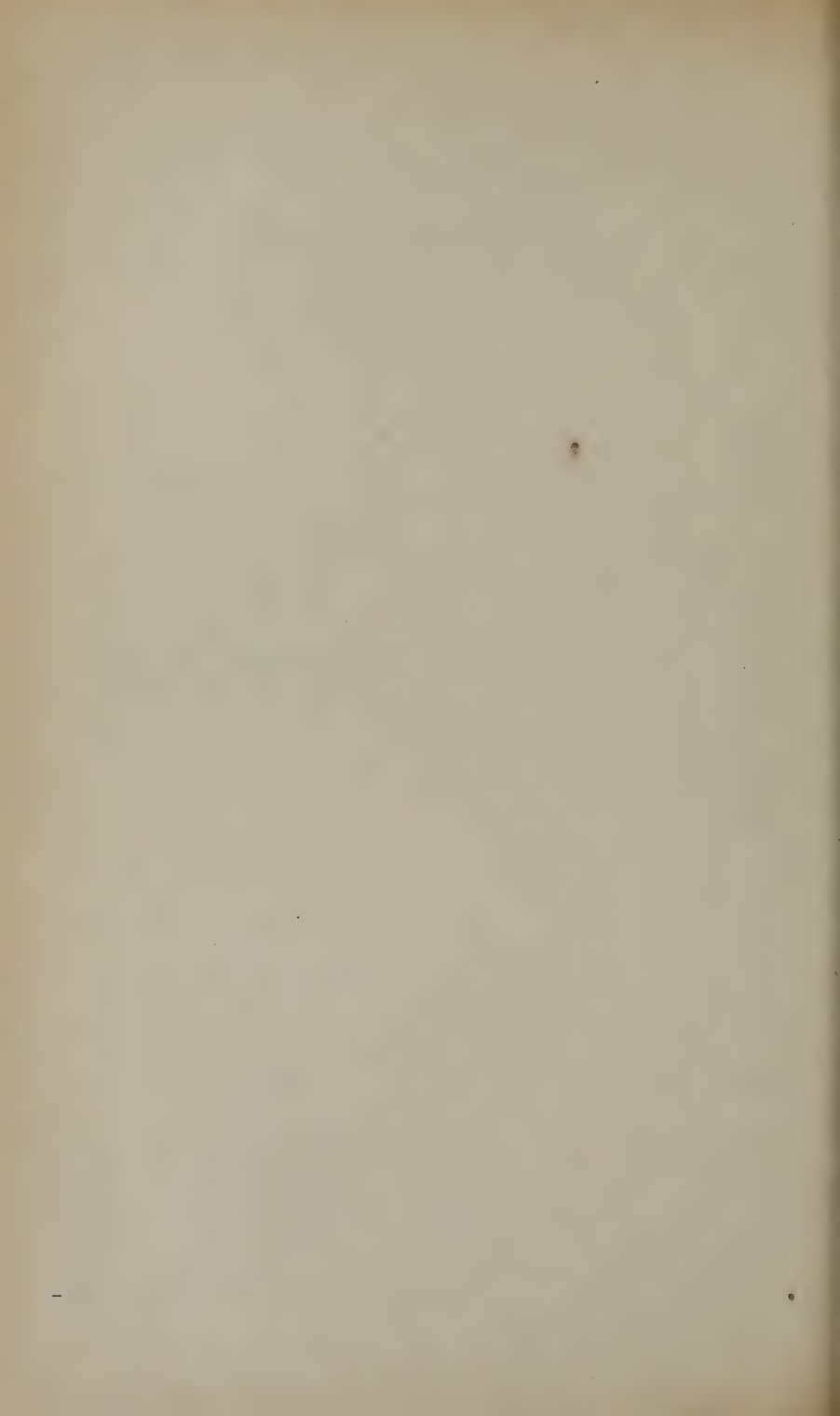
<i>Executive Department.</i>		
Farm, grounds, dwellings, and water-works.....	\$51,075 00	
College Hall.....	78,600 00	
Armory.....	10,950 00	
Mechanics' Hall.....	11,000 00	
Horticultural Hall.....	4,200 00	
Chemical Laboratory.....	9,600 00	
In College Hall.....	1,690 11	
Armory.....	29 15	
Mechanics' Hall.....	126 92	
Horticultural Hall.....	153 50	
Chemical Laboratory.....	62 26	
President's office.....	1,148 86	
Vault.....	99 25	
Secretary's office.....	703 45	
Chapel stage.....	165 00	
Reception room.....	300 00	
Roofing slate on hand.....	175 00	
		\$170,173 80
<i>Chemical Department.</i>		
Analytical tables, with water, gas, etc.....	\$1,340 55	
Chemicals.....	225 65	
Chemical apparatus.....	3,092 60	
Platinum ware, wire, etc.....	121 50	
Mineral collection.....	2,029 30	
Cases for minerals and apparatus.....	1,145 00	
Office furniture and supplies.....	161 05	
Photographic apparatus.....	34 50	
		8,150 15
<i>Horticultural Department.</i>		
Plantations.....	\$2,210 00	
Greenhouse and stock.....	4,211 00	
Greenhouse and lawn tools and supplies.....	181 46	
Horses and horse tools.....	899 55	
Hand garden tools and fixtures.....	486 27	
Workshop tools.....	50 00	
Office furniture, cabinet-cases, and collections.....	3,426 49	
Supplies on hand.....	436 87	
Stone barn.....	1,000 00	
		12,901 64
<i>Botanical Department.</i>		
Microscopes and accessories.....	\$1,522 15	
Furniture and cases.....	507 90	
Supplies.....	50 70	
General herbarium.....	602 80	
Kansas herbarium.....	564 40	
Cryptogamic herbarium.....	38 90	
Herbarium duplicates.....	75 00	
Tools and apparatus.....	79 52	
		3,441 37
<i>Mathematical Department.</i>		
Surveying apparatus.....	\$1,294 40	
		1,294 40
<i>Industrial Art Department.</i>		
Furniture, models, and apparatus.....	\$1,400 51	
		1,400 15

SUMMARY OF GENERAL COLLEGE INVENTORY, JUNE 30, 1892—CONCLUDED.

<i>English Department.</i>		
Cyclostyle, pictures, etc.....	\$30 05	\$30 05
<i>Domestic Department.</i>		
Kitchen furniture.....	\$632 75	
Dairy apparatus.....	197 80	830 55
<i>Sewing Department.</i>		
Machines.....	\$305 00	
Cases and apparatus.....	388 30	693 30
<i>Mechanical Department.</i>		
Wood-shop tools, machinery, and stock.....	\$7,392 17	
Machine-shop tools and machinery.....	3,354 80	
Blacksmith-shop machinery.....	889 82	
Foundry machinery.....	956 74	
Office furniture.....	216 25	
Blue-print room apparatus.....	22 25	
Pipe-house tools and material.....	289 33	
Accounts receivable.....	1,270 38	14,385 74
<i>Musical Department.</i>		
Instruments.....	\$1,725 45	
Furniture, etc.....	63 15	1,788 60
<i>Printing Department.</i>		
Presses and paper cutter.....	\$1,764 00	
Type, cases, stands, and stock.....	2,335 73	
Office furniture.....	79 05	
Accounts receivable.....	76 00	4,254 78
<i>History and Constitutional Law.</i>		
Maps and charts.....	\$62 39	62 39
<i>Farm Department.</i>		
Buildings.....	\$10,760 00	
Work horses.....	375 00	
Cattle—Short-horns.....	3,225 00	
Aberdeen-Angus.....	1,225 00	
Jerseys.....	740 00	
Herefords.....	775 00	
Holsteins.....	900 00	
Sheep—Shropshires.....	220 00	
Swine—Berkshires.....	110 00	
Poland Chinas.....	134 00	
Machinery and tools.....	2,643 00	
Office fixtures.....	227 00	
Miscellaneous farm tools.....	358 30	
Wells, fences, etc.....	1,559 50	
Crops in ground and barn.....	1,905 00	25,156 80
<i>Military Department.</i>		
Cases, tools, etc.....	\$113 70	
Uniforms.....	924 72	1,038 42
<i>Physics Department.</i>		
Telegraph supplies.....	\$150 40	
General physical apparatus.....	477 20	
Sound apparatus.....	108 00	
Heat apparatus.....	163 65	
Meteorological apparatus.....	171 85	
Light apparatus.....	507 60	
Bells and lines.....	153 70	
Electrical apparatus.....	1,519 80	
Cases, tables, etc.....	597 00	3,849 20
<i>Museum and Veterinary Department.</i>		
Zoölogical collection.....	\$2,090 78	
Scientific club donations.....	121 00	
Geological collections.....	1,298 00	
Models and specimens in anatomy.....	425 45	
Cases and apparatus.....	2,515 25	
Veterinary instruments.....	86 15	6,536 63
<i>Library Department.</i>		
Books, pamphlets, etc.....	\$20,070 30	
Furniture.....	700 10	
Card catalogue.....	1,967 00	
Binders, cases, etc.....	168 85	
Cash.....	12 40	
Bills receivable.....	17 00	22,865 65
<i>Treasurer's Department.</i>		
Accounts receivable.....	\$4 72	
Office furniture.....	86 45	91 17
Grand total.....		\$278,926 15



BIENNIAL REPORTS
OF
COLLEGE DEPARTMENTS,
1891-'92.



REPORT OF THE PRESIDENT.

To the Board of Regents:

GENTLEMEN—I am glad to present herewith the outline of College matters under my direct management during the prosperous two years ending June 30, 1892, leaving the details of the several departments to be presented by the officers in charge.

The Faculty has had some change in its make-up, both by resignations and by additions. In the summer of 1890, Lieut. J. M. Morrison, whose three years of very satisfactory service as Professor of Military Science and Tactics was terminated by expiration of detail, was succeeded by Lieut. (now Captain) E. B. Bolton, detailed from the Twenty-third U. S. Infantry. About the same time Mr. E. R. Nichols, of the Iowa State University, was appointed instructor and afterwards Professor in Physics and Superintendent of Telegraphy, the instruction in physics having been given for the previous year by Lieutenant Morrison. In October following, Dr. N. S. Mayo, of the Michigan State Agricultural College, was called as instructor, and later made Professor in the chair of Physiology and Veterinary Science, which had been vacant since September, 1889. In August, 1891, Prof. W. A. Kellerman, whose enthusiastic and earnest work in the chair of Botany and as teacher of other sciences since 1883 had made his name familiar throughout the State, resigned to accept a similar chair in the State University of Ohio. His successor was found in Prof. A. S. Hitchcock, of the Missouri School of Botany, St. Louis, who entered upon duties January 1, 1892. In September, 1891, Mr. J. T. Willard, a graduate of this College, who had acceptably filled the position of assistant chemist in the Station since July, 1888, and had been assistant in the College Department of Chemistry from 1881 to 1887, was made Assistant Professor of Chemistry. At the same time, Mr. James W. Rain, of Oberlin College, was appointed instructor in English, but, after very acceptable service of a year, declined promotion for the sake of completing his studies for his chosen profession, the ministry. In April, 1892, Mr. S. C. Mason, assistant horticulturist in the Station from its organization, was elected Assistant Professor of Horticulture, to take his seat in the Faculty with the opening of the next College year, in September.

Other changes among the employés have concerned the corps of workers in the Station. Mr. J. T. Swingle, assistant botanist since 1888, resigned in April, 1891, to accept a more lucrative position as assistant botanist of the United States Department of Agriculture, division of vegetable pathology. His successor, appointed in January, 1892, is Mr. M. A. Carleton, a graduate of this College, class of '87, a teacher of several years' experience in Garfield University, Wichita. In October, 1891, Mr. H. M. Cottrell, assistant agri-

culturist since 1888, resigned to accept the place of superintendent of the large dairy farm of Vice-President Morton, at Rhinecliffe, N. Y., and Mr. F. C. Burtis, a graduate in the class of 1891, was appointed to the vacancy. Upon the opening of the new iron shop, in September, 1891, Mr. E. Harold was made foreman, Mr. C. A. Gundaker being given the title of engineer.

The Faculty proper now numbers 20 members, with the promise of two more as assistants in mathematics and English at the opening of the next College year, while assistants, foremen, etc., number 13. Thirty-five employés of the Board thus have responsibility in connection with College work. A few more are employed by the month in care of teams and herd, but most manual labor in all departments is performed by students.

The Faculty has held regular weekly meetings during term time, all matters of discipline and routine of studies for students being decided there. For greater efficiency, the body is organized in the following standing committees:

Farmers' Institutes.—Professors Failyer, Popenoe, Walters, Graham, and Georgeson.

Post-Graduates.—Professors Popenoe, Failyer, Hood, Georgeson, and Nichols.

Library.—Professors Lantz, Failyer, Popenoe, Olin, and Georgeson.

Industrialist.—Professors Walters, Failyer, Lantz, Thompson, and Georgeson.

Examinations and Grades.—Secretary Graham, Professors Lantz, Olin, White, and Nichols.

Public Exercises.—Professors Olin, Popenoe, Brown, White, and Bolton.

Social and Literary Entertainments.—Mrs. Kedzie, Mrs. Winchip, Professors Brown, Hood, and Bolton.

Buildings.—Professors Hood, Popenoe, Walters, Mayo, and Willard.

Catalogue, Blanks, etc.—Professors White, Lantz, Graham, Olin, and Thompson.

Athletics.—Professors Georgeson, Failyer, Kedzie, Mayo, and Rain.

Museum.—Professors Mayo, Failyer, Popenoe, and Graham.

The present organization of the corps of instruction is believed to be in every way satisfactory, and the College is to be congratulated on the fact that, though many of the older members of the Faculty have been tempted by larger salaries to accept places in other institutions, there has been a disposition to hold fast to the good work going forward here. A comparison of the salaries paid at this institution with those at similar institutions throughout the West will show that salaries paid here are among the lowest, if not the lowest, in the record. This fact is worthy of mention as showing the general devotion of the Faculty to the interests of the College, and their enjoyment of the work.

The work accomplished by the several members of the Faculty in the several departments will appear in the supplementary reports. It is proper here to call attention to the following list of lectures delivered at the College, as a part of the general routine:

1890-'91.

Professor Kellerman, September 19, "The Breathing Apparatus."

Professor Walters, October 3, "The Farmer of Switzerland."

Secretary Graham, October 25, "A Trip to Colorado."
 Professor Hood, November 14, "The Magic Lantern."
 Professor Brown, January 23, "Knowledge and Culture."
 Professor Kedzie, February 20, "A Good Dinner."
 Superintendent Thompson, March 27, "The Manufacture of Paper."
 Professor White, April 24, "The Constitution of Kansas."
 Professor Georgeson, May 16, "Tea."

1891-'92.

Lieutenant Bolton, September 18, "The Management of European Armies."
 Professor Nichols, September 25, "The Growth of Mathematics."
 Professor Mayo, October 23, "Life."
 Professor Willard, November 27, "Carbon."
 Professor Rain, January 15, "Robert Burns."
 President Fairchild, February 5, "Coin and Currency."
 Professor Failyer, February 26, "Ornamental Stones."
 Professor Popenoe, March 25, "Kansas Fauna."
 Professor Lantz, April 8, "The Solar System."
 Professor Walters, April 29, "The Economic Value of Education."
 Secretary Graham, May 27, "The Other Half."

STUDENTS.

The number of students in attendance during the past two years has been greater than in any previous period, filling to overflowing the class-rooms and laboratories available for use. The enrollment is shown in the following summary from the annual catalogue:

1890-'91.	Gentlemen.	Ladies.	Total.	1891-'92.	Gentlemen.	Ladies.	Total.
Post-graduate	6	6	12	Post-graduate	3	7	10
Fourth year	31	22	53	Fourth year	27	10	37
Third year	38	12	50	Third year	43	19	62
Second year	80	55	135	Second year	93	46	139
First year	217	126	343	First year	236	100	336
Totals	372	221	593	Totals	402	182	584
From 73 counties of Kansas	555			From 77 counties of Kansas	552		
From 20 other States	38			From 14 other States	32		
Applicants not enrolled	26			Applicants not enrolled	29		

Most gratifying, in connection with this attendance, has been the greater average attendance in comparison with the whole numbers. During the fall and winter terms of both years this has been not far from 500, and during the spring term, when farmers' sons are wanted at home, has reached nearly 400. This fact shows an increasing tendency among farmers to give their children opportunities for fuller courses of study. Another gratifying fact has been the improvement shown in the degree of preparation with which students come to College. The average age remains essentially what it has been for several years past, though the whole body of students shows a more uniform maturity than heretofore. The attendance from the various counties of the State, as recorded below, shows a widely-extended interest in the College, and a tendency toward a still better representation of the several coun-

ties of the State. Fully 70 per cent. of the students in attendance are shown by the records to be from farmers' homes, so that of all such colleges in the United States this stands among the most representative in relation to the farmers' interests throughout the State. No other has so large an attendance; and no other has so large a proportion of farmers' children.

ATTENDANCE BY COUNTIES.

	1890, '91.	1891, '92.		1890, '91.	1891, '92.
Anderson.....	1	2	Linn.....	4	2
Atchison.....	3	1	Lyon.....	4	2
Barton.....	....	1	McPherson.....	9	8
Bourbon.....	1	1	Marion.....	2	8
Brown.....	4	1	Marshall.....	9	11
Butler.....	4	1	Meade.....	....	1
Chase.....	4	3	Miami.....	3	1
Chautauqua.....	....	1	Mitchell.....	9	8
Cherokee.....	....	1	Morris.....	7	6
Clay.....	12	11	Nemaha.....	4	9
Cloud.....	4	4	Neosho.....	3	1
Coffey.....	5	4	Ness.....	3	2
Cowley.....	9	4	Norton.....	1	1
Crawford.....	1	1	Osage.....	7	22
Dickinson.....	4	5	Osborne.....	5	6
Doniphan.....	3	1	Ottawa.....	9	6
Douglas.....	3	2	Pawnee.....	1	1
Elk.....	3	3	Phillips.....	2	3
Ellis.....	1	....	Pottawatomie.....	25	30
Ellsworth.....	2	....	Rawlins.....	2	2
Finney.....	2	3	Reno.....	....	1
Ford.....	1	1	Republic.....	1	5
Franklin.....	5	5	Rice.....	3	4
Garfield.....	....	1	Riley.....	192	176
Geary.....	13	10	Rooks.....	1	1
Gove.....	2	....	Rush.....	5	4
Graham.....	4	4	Russell.....	5	8
Grant.....	1	....	Saline.....	1	2
Greenwood.....	1	3	Sedgwick.....	....	4
Harper.....	2	2	Shawnee.....	34	33
Harvey.....	1	1	Sherman.....	....	1
Jackson.....	2	11	Smith.....	3	6
Jefferson.....	9	16	Sumner.....	9	5
Jewell.....	2	2	Thomas.....	....	2
Johnson.....	13	13	Trego.....	1	2
Kingman.....	1	2	Wabaunsee.....	23	20
Kiowa.....	1	2	Wallace.....	1	1
Labette.....	3	2	Washington.....	7	6
Lane.....	1	....	Wilson.....	2	2
Leavenworth.....	6	5	Woodson.....	6	6
Lincoln.....	2	3	Wyandotte.....	7	5

All students have been required, as for many years past, to follow some line of industrial training, whatever course of study they may be pursuing. The proficiency made during the limited training which is made possible under such conditions is a surprise even to those most familiar with the past experience; and the improved methods and the familiarity with the work among the instructors increases from year to year. Such training is making its mark, not only upon the students as they go from the College, but in the general ingenuity of the State from the influence of the multitudes who have

gone out from us. This influence is felt in other States—especially in the newer organizations for similar instruction—where the reputation of this College has made place for our system of training, and for instructors from among our trained graduates.

GRADUATES.

The classes graduating in 1891 and 1892 have been much larger than in any previous years. The class of 1891 numbered 52, almost double the number of any previous class. The special circumstances which held this class together until graduation are not likely to occur again, and it may be some years before the same number is reached. The class of 1892 numbered 36, and the succeeding class is likely to be a considerable increase upon that. Below are given the names of the graduates, with their residences:

1891.

William Aaron Anderson.....	Leonardville.....	Riley.
William Sherman Arbuthnot.....	Cuba.....	Republic.
Herman Willard Avery.....	Wakefield.....	Clay.
Judd Noble Bridgman.....	Atchison.....	Atchison.
Robert James Brock.....	Centralia.....	Nemaha.
Francis Charles Burtis.....	Manhattan.....	Riley.
Charles Albert Campbell.....	Manhattan.....	Riley.
Spencer Norman Chaffee.....	Green.....	Clay.
Ephraim Clay Coburn.....	Kansas City.....	Wyandotte.
Gertrude Coburn.....	Kansas City.....	Wyandotte.
Tina Louise Coburn.....	Kansas City.....	Wyandotte.
Rachel Callie Conwell.....	Manhattan.....	Riley.
Christine Mossman Corlett.....	Guthrie.....	Oklahoma.
Mary Emmeline Cottrell.....	Wabaunsee.....	Wabaunsee.
Phil Sheridan Creager.....	Jamestown.....	Cloud.
Kary Cadmus Davis.....	Junction City.....	Geary.
Thomas Clarke Davis.....	Benedict.....	Wilson.
Helen Pearl Dow.....	Manhattan.....	Riley.
Anna Della Fairchild.....	Manhattan.....	Riley.
Harry Benson Gilstrap.....	Arkansas City.....	Cowley.
Almon Arthur Gist.....	Manhattan.....	Riley.
Amy Myrtle Harrington.....	Junction City.....	Geary.
Delpha May Hoop.....	Manhattan.....	Riley.
Mayme Amelia Houghton.....	Manhattan.....	Riley.
Willis Wesley Hutto.....	Manhattan.....	Riley.
George Victor Johnson.....	Cedar Vale.....	Cowley.
Frank Mullett Linscott.....	Holton.....	Jackson.
Bessie Belle Little.....	Manhattan.....	Riley.
Albert Edwin Martin.....	Atchison.....	Atchison.
Nellie Evangeline McDonald.....	Manhattan.....	Riley.
David Collins McDowell.....	Manhattan.....	Riley.
Alfred Midgley.....	Minneapolis.....	Ottawa.
Madeline Wade Milner.....	Manhattan.....	Riley.
Paul Chambers Milner.....	Manhattan.....	Riley.
Harry Elbridge Moore.....	North Topeka.....	Shawnee.
John Otis Morse.....	Mound City.....	Linn.
Hattie May Noyes.....	Wabaunsee.....	Wabaunsee.
Louise Reed.....	St. Clare.....	Pottawatomie.
Artemus Jackson Rudy.....	Butler.....	Missouri.
Henry Vernon Rudy.....	Butler.....	Missouri.
Lottie Jane Short.....	Blue Rapids.....	Marshall.
Ben Skinner.....	Fairview.....	Brown.
Caroline Scott Stingley.....	Manhattan.....	Riley.
Lillian Alice St. John.....	Zeandale.....	Riley.

Ellis Cheney Thayer	Maple Hill	Wabaunsee.
Sam L. Van Blarcom	McPherson	McPherson.
Frank Albert Waugh	McPherson	McPherson.
Fannie Elizabeth Waugh	McPherson	McPherson.
Flora Emilie Wiest	Manhattan	Riley.
Bertha Winchlip	Manhattan	Riley.
Alfred Orin Wright	Manhattan	Riley.
Effie Jeanetta Zimmerman	Troy	Doniphan.

1892.

Grace Maria Clark	Junction City	Geary.
George Lemon Clothier	Vera	Wabaunsee.
Lillian Clyde Criner	Moundridge	McPherson.
Harry Darnell	Ward	Wilson.
William H. Edelblute	Keats	Riley.
Elizabeth Edwards	Abergele	Wales.
John Frost	Blue Rapids	Marshall.
Effie Gilstrap	Geuda Springs	Sumner.
Ava Hamill	Olathe	Johnson.
J N Harner	Green	Clay.
Loyall S. Harner	Leonardville	Riley.
Charles Pinckney Hartley	Manhattan	Riley.
John William Abraham Hartley	Manhattan	Riley.
James Laird McDowell	Manhattan	Riley.
Robert A. McIlvaine	Maryville	Tennessee.
Kate Oldham	Keats	Riley.
Daniel Henry Otis	Topeka	Shawnee.
Ivan B. Parker	Hill City	Graham.
Warner S. Pope	Cawker City	Mitchell.
Berton Homer Pugh	Topeka	Shawnee.
Elias W. Reed	St. Clere	Pottawatomie.
Robert Stirling Reed	Cedar Point	Chase.
Arthur Daniel Rice	Washington	Washington.
Fred. C. Sears	Tescott	Ottawa.
Birdie E. Secrest	Randolph	Riley.
May Secrest	Randolph	Riley.
Ruth Tipton Stokes	Garnett	Anderson.
Harry W. Stone	Atchison	Atchison.
Walter Percival Tucker	Douglass	Butler.
Mary Alice Vail	Manhattan	Riley.
Robert Linn Wallace	Williamsburg	Franklin.
Ora Rebecca Wells	Irving	Marshall.
Daniel F. Wickman	Topeka	Shawnee.
George Washington Wilden	Melvorn	Osage.
Charles Ernest Yeoman	La Crosse	Rush.

FARMERS' INSTITUTES.

Although the State has made no provision for maintaining farmers' institutes, the College has, as heretofore, organized each winter from 10 to 12 such meetings in as many different counties. Something over 50 counties have now been reached, and in most of them permanent organizations exist, with arrangements for at least annual meetings, with only occasional assistance from the College. During the past two years the members of the Faculty have taken a prominent part in the institutes held, as indicated by the following lists:

1890-'91.	
Lawrence	December 11, 12.
Wellsville	December 18, 19.
Marysville	January 22, 23.
McPherson	January 22, 23.
Peabody	January 29, 30.
Hiawatha	February 5, 6.

1890-'91.	
Stockton	February 5, 6.
Wabaunsee	February 12, 13.
Waverly	February 19, 20.
Dodge City	February 26, 27.
Garden City	February 27, 28.

1891-'92.

Oneida	December 3.
Gardner	December 17, 18.
Frankfort	January 13, 14.
Topeka	February 9, 10.
Bluff City	February 11, 12.
McPherson	February 18, 19.

1891-'92.

Oskaloosa	February 18, 19.
Dodge City	February 24, 25.
Osborne	February 25, 26.
Garden City	February 26, 27.
Constant	March 3, 4.

GENERAL COURSE OF STUDY.

Within the past two years the Faculty have revised the course of study with the most careful scrutiny, and have made such changes as from the general advancement of education in the State has seemed desirable, so that the course in this College shall be practically a continuation of the common-school courses, without interruption. In order to still more intimately connect the district schools with the College course, it was decided, in the summer of 1890, to accept, in lieu of examination for admission, the diplomas granted from county courses in some 50 counties of the State, and the certificates of having completed grammar grades in as many different cities. A trial of this plan during the past two years has been eminently satisfactory, such students being, in general, well prepared for the work of the first year at college.

The course now assumes the completion of the so-called common branches, and proceeds at once to combine with a careful training in the English language such an outline of mathematics as is essential to clear reasoning in the natural sciences and mechanical pursuits, while a careful adaptation of the several sciences to the advancement of the students in their proper relation to each other and to the general pursuit of agriculture has been made a prominent part of the course. The training in agriculture, horticulture, agricultural chemistry, economic entomology and household economy still form the basis of the course of study, all other parts being made to conform to the wants of the students in an agricultural college. At the same time, and in the same course, provision is made for arousing ingenuity and cultivating skill with reference to general mechanics, but no distinct mechanical course has been provided. The full outline of the course of study, including constitutional government and political economy, is given in the annual catalogue, and is published also in the report to the Board of Regents.

This course has proved in the past so well adjusted to the wants of farming communities, and so naturally progressive in its provision for instruction in agriculture, that no serious demand for so-called short courses of lectures in agricultural subjects has been felt. The demand, if genuine, would be easily met by adjustment to the present course. So far, it is evident that the class of young farmers ready to avail themselves of such lecture courses has not yet appeared in Kansas, although every suggestion of such a need has been carefully scrutinized. It must be remembered that the establishment of such courses in other States has, without exception so far, been where no general course in agriculture and agricultural science has been provided apart from the technical course of the universities. This in part explains the limited inquiry for such courses here, since the whole College is devoted to the

subject of agriculture and kindred industries. A much larger demand has been felt for special training in the mechanic arts. Such training, without a genuine course of study to accompany it, the authorities have not thought it proper for the College to give, since a liberal education in connection with the industries of life seems to have been the object of founding such an institution. It has been found possible in the past to aid those who could not afford the full course of four years by admission to partial courses at such stages of advancement as their examination might show them fitted for. More than 4,000 different students have thus had advantages of some industrial training along with intellectual improvement. These make an extensive body of useful and interested citizens who acknowledge their debt to the College.

It is still found necessary to provide special irregular courses for students of mature years who, for lack of advantages, are not prepared to enter the first year in full. Such courses, during the past two years, have received a somewhat smaller number of students in proportion to the whole number than in earlier years. It seems best, however, to continue such courses so long as young men from 20 to 25 years of age are looking for schools in which they can acquire even an elementary education. These special courses do not make a distinct preparatory department, for the reason that many students come prepared in some studies, and are deficient in others. All are classed in first year, but some of them may require a full year's preparation before being properly registered in the first year of the course.

The College, at present, grants only two degrees: That of bachelor of science, at the completion of the four years' course, and that of master of science, granted after two or more years of post-graduate study. Those who remain at least a year in such study at the College may gain the master's degree upon examination and presentation of a satisfactory thesis, two years from graduation. Non-resident graduates become eligible for the master's degree upon the same examination and thesis, three years from graduation. To aid such graduates as desire to fit themselves for teachers of such special sciences as relate to agriculture, the mechanic arts, or household economy, post-graduate courses are provided as individual students may find practicable, and such students are in attendance in greater numbers from year to year. The demand for expert workers in the various agricultural stations of the country and in the newer agricultural colleges has encouraged our graduates to make a special preparation for such work.

The whole body of graduates is distributed throughout this State and other States in positions of importance in the various pursuits of life. Some 35 per cent. of the young men are connected with agricultural pursuits; many are temporarily teaching in the public schools; less than 15 per cent. are found in the learned professions; while the remainder are employed in a variety of mechanical pursuits and general business. Some have already won repute as special workers in agricultural investigations, and are showing their fitness for this work in such a way as to increase the repute of the Col-

lege. With so large a body of earnest men and women interested in the welfare of the College, it would seem desirable, if possible, to secure some method for the representation of that body of alumni in connection with the board of control.

THE EXPERIMENT STATION.

A full report of the work of the Experiment Station is published annually, under the act of Congress establishing it. Nothing more is proper here than to call attention to the importance of that work, and its hearty recognition by other agriculturists, and by investigators in other States. The agricultural press of the whole country has been united in praise of the work of this Station, and its bulletins have been frequently named as models of thoroughness and accuracy. Its methods of systematic record and arrangement for permanence of records have been commended by the highest authority in the country. This College was better prepared for such work than most institutions at the outset, and has not flagged for a moment in its energetic use of the funds available for genuine research in agricultural knowledge, or in tests of improved methods. The cost of its publications, distributed to some 5,000 farmers of the State who apply for them, is no small part of the expense of the Station; but the Council has not thought it wise to curtail this expense by neglecting to publish what is growing yearly more and more valuable.

The lines of experiment have been those promising most lasting advantage to farmers, among the questions of present interest. The corn crop, cereals, forage, ensilage, grasses, sorghum and beets for sugar, garden crops, small fruits, orchard and vineyard growth, live stock in breeding and feeding, diseases of plants and animals, etc., are subjects of constant study and frequent report. Some questions have been satisfactorily settled; others may properly be subjects of inquiry for many years. The effort of the Council has been to make so plain the work actually done that any data furnished by this Station may be useful for all time and in any investigations of similar nature.

PERSONAL DUTIES.

The usual routine of teaching one study to the fourth-year class has occupied me daily throughout the college year. During the fall term a general outline of human nature, including rights, duties, and the principles of government, was given by text-books and lectures. In the winter term the class mastered the subject of logic, deductive and inductive. The spring term gave a course of 10 weeks in political economy by lectures, upon a printed outline prepared and presented to the students by myself. These classes averaged about 40 in number.

The care for general discipline, though shared by the Faculty in spirit and support in emergencies, has rested in no light measure upon the shoulders of the President. It is a gratifying fact that the general disposition of the body of students is so orderly and earnest that usually very little attention is re-

quired beyond measures for reducing to a minimum the friction of mere numbers. No body of 500 students anywhere is more orderly and studious than these young people who meet here from the whole State as representatives of farm homes. A case of discipline for any misdemeanor outside of personal attention to routine duties is rare indeed. During the past two years a series of so-called "college tricks," performed by a few persons, led to somewhat severe punishment by suspension or reprimand. The statement sometimes made by too ardent agents for the support of special institutions, that the State institutions are without wholesome moral influences, is, so far as this College is concerned, without a shadow of foundation.

More of the time of the executive is taken up with the general oversight of the many departments of interest. The adjustment of financial interests, under present legislation, places upon the President of the College, who is also Secretary of the Board of Regents, responsibility in all financial matters, including even the investment of the endowment fund. This burden, comparatively light when the endowment was chiefly in land contracts, and the expenditure amounted to little more than \$20,000 per annum, has grown to be a constant care when the investment of bonds is of constant recurrence, and the expenses are more than tripled.

The naturally-increasing correspondence of the executive office has been partially provided for by the aid of a diligent and conscientious type-writer. But no amount of assistance can relieve from the cares which the thousands of inquiries by letter must bring. A full record of business correspondence, in files and copies, has been kept for the past 13 years.

The increased burden of routine duties, from the expansion of the College of late years, has curtailed somewhat the opportunity for outside work in educational matters of the State and the nation. I have shared in the work of the State Board of Education at all but one of its meetings; have prepared a fair share of questions for State and county examinations, and have assisted in the examination of papers presented for State certificates. In the State Teachers' Association my seat has not been vacant, and in a half-dozen local associations a prominent place on the programme has been assigned me. In the same connection, I have been elected and served as treasurer of the board of directors of the Kansas educational exhibit for the Columbian Exposition. One address before the annual meeting of the State Board of Agriculture, and one before the State Horticultural Society, have been supplemented by some six addresses upon topics connected with agriculture or industrial training at farmers' institutes and general gatherings. In the one annual meeting of the Association of American Agricultural Colleges and Experiment Stations attended, I held, by election, the place of first vice-president; and in one meeting of the National Educational Association, held at Toronto, I was reelected to the National Council, after a term of six years. These outside efforts have been considered as truly duties connected with the position as ordinary presidential cares.

From personal considerations only, I have accepted for several years past the presidency of the Midland Association of Oberlin College Alumni, with headquarters at Kansas City, and delivered the annual address before the Society of Alumni, at Oberlin College, Ohio, at the commencement of 1891. Numerous other invitations for public addresses have been declined for the sake of office duties, and with rare exceptions have the most important of outside duties called me away from the office in term time more than 24 hours. For the first time in more than 20 years my duties have been interrupted by illness, which confined me for a week, in January, 1892.

A pleasant duty, but one of some care, has been the editorial charge of the *Industrialist*. While the Faculty have shared in rotation the preparation of editorial matter, the Superintendent of the Printing Department has taken great interest in the local news, and Professor Walters has regularly provided his educational news, I have myself supervised all student editorials and read in proof the most of the issues, besides furnishing a large proportion of the news items and references to former students. This care has kept the paper a cherished organ of usefulness for the College both at home and abroad. Its circulation, largely to exchanges and interested friends, is about 2,000.

EXPENDITURES.

Under the direct oversight of the President are all expenditures in care and repair of buildings, maintenance of general boundaries, furnishing of class-rooms, provision of incidental supplies, fuel, water, and lights, and all general office requisites in stationery, postage, mail carrying, drayage, etc. The following summary of accounts for the years ending June 30, 1891, and June 30, 1892, will show the nature and amount of such expenditures :

SOURCES OF EXPENDITURES.

	1890-'91.	1891-'92.
From State appropriations.....	\$4,618 07	\$9,105 42
From income fund.....	4,825 88	2,740 49
From other departments.....	1,210 13	684 94
Totals.....	\$10,653 08	\$12,530 85

CLASSIFICATION OF EXPENSES.

ITEMS.	1890-'91.		1891-'92.	
<i>Offices:</i>				
Postage.....	\$461 32		\$298 80	
Stationery.....	21 84		48 40	
Furniture.....	95 11		4 60	
Labor (clerical) and mail carrying.....	679 67	\$1,257 94	792 31	\$1,144 11
<i>Care of buildings, heating, etc.:</i>				
Janitors' wages—two men.....	\$950 00		\$950 00	
Students' wages.....	697 52		1,205 25	
Fuel.....	1,391 50		1,024 23	
Lights.....	189 03		156 56	
Implements.....	61 45	3,289 50	118 45	3,454 49
<i>Buildings:</i>				
Repairs.....	\$1,071 46		\$3,122 60	
Improvements.....	235 78	1,307 24	1,500 00	4,622 60

CLASSIFICATION OF EXPENSES—concluded.

ITEMS.	1890-'91.		1891-'92.	
<i>Grounds:</i>				
Care and water supply.....	\$318 63		\$324 99	
Improvements.....	1,110 19	1,428 82	1,511 93	1,836 92
<i>Offices and general class-rooms:</i>				
Furniture.....	\$679 91		\$334 96	
Incidentals.....	449 24	1,129 15	346 74	681 70
<i>Sundries:</i>				
Regents, hack hire.....	\$76 25		\$60 00	
Taxes.....	17 78			
Advertising.....	95 00			
Water supply.....	38 42			
Water meter.....	150 00			
Veterinarian.....	28 00			
Expenses, travel.....	58 72		53 75	
American Association Agricultural Colleges and Experiment Stations.....	60 70		35 00	
Farmers' institutes.....	254 33		251 79	
State Board of Education.....	5 85			
Rent.....	50 00		100 00	
Cuts for catalogue.....	28 90		42 00	
Symposium.....	35 00			
Telephone line.....			167 95	
State fair.....			91 06	
Real estate.....			25 80	
Commencement and diplomas.....			161 33	
Flag.....			17 60	
Columbian Exposition.....			49 92	
Photos.....			2 15	
		898 95		1,058 35
Totals.....		\$9,311 60		\$12,798 17

RECEIPTS.

	1890-'91.	1891-'92.
From cash sales.....	\$35 00	\$60 88
From other departments.....	63 59	46 47
Totals.....	\$98 59	\$107 35

In closing this somewhat detailed statement of the condition of the College I may be pardoned, perhaps, if a comparison of figures is given showing the relative proportions of the institution as it now stands to its condition in 1880, when it first came under my oversight. The material growth here shown is the least part, I believe, of its true advancement in influence and usefulness. With the added facilities in building which the State must soon supply, its reach can be widely increased, with no greater outlay than is already provided for by its established income without taxation.

	1880.	1892.
Number of members of Faculty.....	12	22
Number of assistants.....	1	12
Number of student assistants.....	1	18
Number of students.....	276	584
Number of post-graduates.....		13
Total number of graduates.....	56	320
Average age of students (years).....	18.86	19.80
Amount of productive endowment.....	\$220,329 36	\$502,927 35
Value of buildings and grounds.....	60,345 00	176,185 00
Value of apparatus, etc.....	25,663 76	102,734 55
Total amount of inventory, College and Station.....	86,008 76	291,589 26
Amount of annual income, College and Station.....	19,320 49	68,857 31
Library, number of bound volumes.....	2,500	12,421

Allow me to express to yourselves as a Board my hearty gratitude for energetic and constant interest in college needs, and most gratifying confidence in the general management.

Respectfully submitted, GEO. T. FAIRCHILD, *President*.

COLLEGE, June 30, 1892.

SECRETARY'S REPORT.

To the Board of Regents:

GENTLEMEN — Herewith is submitted a brief report of the work in my charge during the two years ending June 30, 1892.

As your Assistant Secretary, no further report of work done is submitted than that included in the report of the Secretary.

The enrollment of students in book-keeping and commercial law for the two years is shown in the following table:

CLASSES.	1890-'91.			1891-'92.		
	Ladies.	Gentlemen.	Total.	Ladies.	Gentlemen.	Total
Fall term.....	16	32	48	.....	.....	.....
Winter term.....	45	86	131	48	110	158
Spring term.....	22	25	47	11	13	24
Totals.....	83	143	226	59	123	182

A portion of these students have been in the charge of Professor Nichols, in book-keeping, in each winter term, but all have been in my charge in commercial law.

During the period covered by this report, there have been issued by the College and Experiment Station the following publications, most of which have been mailed from this office, a few copies of each being retained for later distribution:

Experiment Station bulletins	161,000
Experiment Station annual reports.....	14,000
College catalogues.....	13,000
Special issues of the <i>Industrialist</i>	40,000
Biennial report of the College.....	1,500
Total	229,500

The general correspondence of the Experiment Station is quite bulky, and, as the work becomes more widely known and appreciated, it must continue to grow.

The list of names of persons to whom the publications of the Experiment Station are sent numbers about 6,000, including Kansas newspapers and officers of Experiment Stations in other States. The great majority of the names upon the mailing list are, however, those of Kansas farmers.

The usual work which has come to me through a membership in several of the standing committees of the Faculty, contributions to the *Industrialist*,

the attendance upon and reading papers before teachers' and other associations in different parts of the State, and attendance upon farmers' institutes, has been much the same as heretofore.

With the growth of the College, the work of this office has constantly increased, until it seems to emphasize the necessity for a larger and better-lighted office. The work done here includes the keeping of a record of all expenditures and receipts made by all the different departments of the College and Experiment Station, and their summing up into monthly balances; a record of the expenditure of State appropriations, accounts with land sales yet incomplete, a record of all investments of the endowment fund, accounts with the State and College treasurers and the College Loan Commissioner, the compiling of the annual inventory of all College departments, a record of all transfers of values between departments, the keeping of the minutes of all Faculty and Council meetings, and individual records of each student enrolled, a record of the absence of students from the general exercises, the distribution and gathering of the daily mail for Faculty and students, the reading of all the *Industrialist* exchanges, the mailing of the bulletins and reports of the Experiment Station and the catalogues and reports of the College and special issues of the *Industrialist*, the paying of the monthly pay-roll of students and men, attending to a growing correspondence, the preparation for and examination of work done by the classes in book-keeping, the keeping of the necessary supplies of stationery, etc., for the use of the departments, the filing of the bulletins and reports received from experiment stations in other States and countries, the furnishing of information to students in regard to boarding places and the caring for their lost articles, the examination of candidates for admission to classes after the opening of each term, and the holding of various special examinations. Such are some of the duties which make urgent this need for more room and better light.

Respectfully submitted,

I. D. GRAHAM,

*Assistant Secretary of Board,
Secretary of Faculty,
Secretary of Experiment Station Council, and
Instructor in Book-keeping and Commercial Law.*

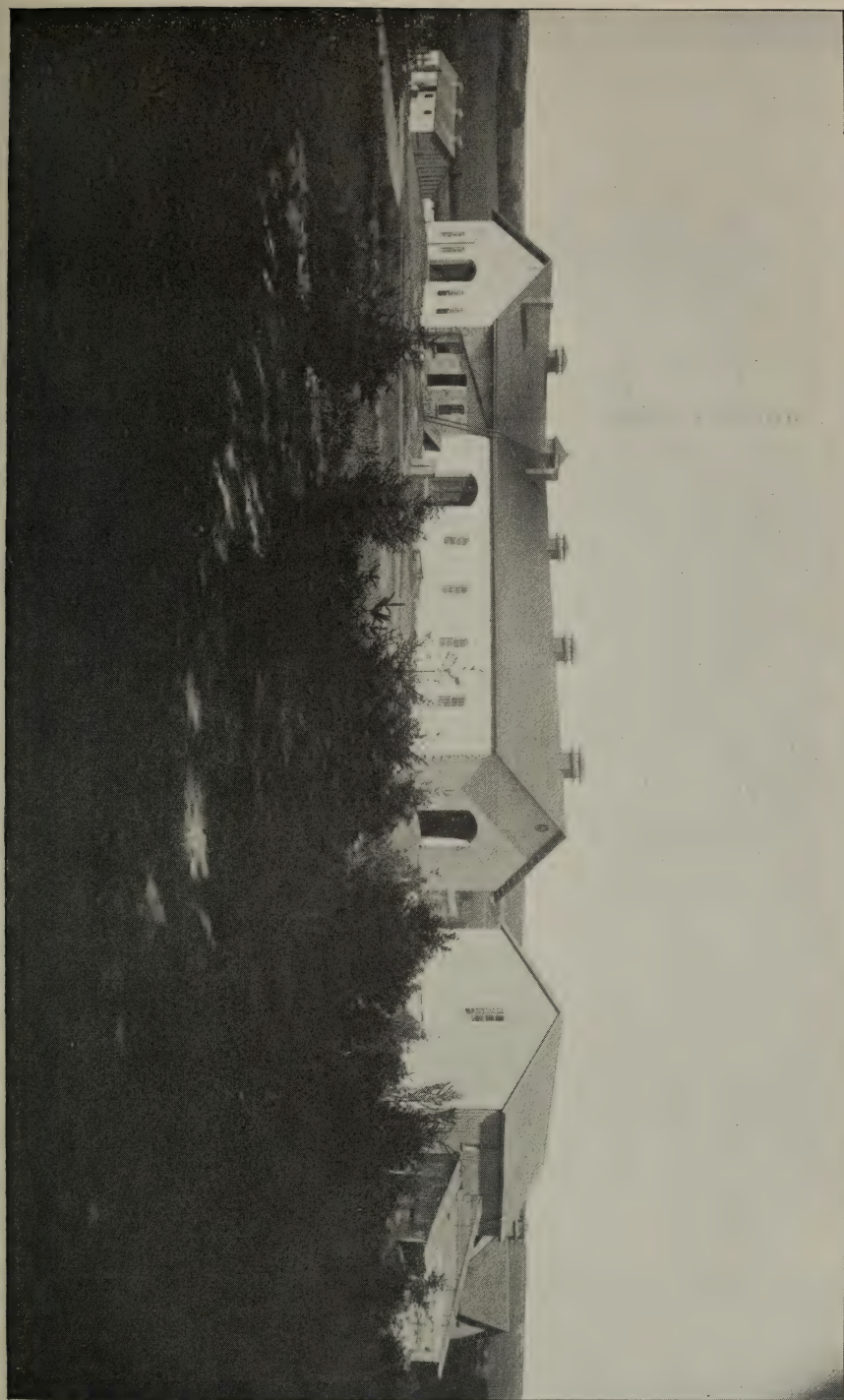
COLLEGE, June 30, 1892.

THE FARM DEPARTMENT.

To the Board of Regents:

GENTLEMEN—I have the honor to render you the following report of the Farm Department, covering the period from June 30, 1890, to June 30, 1892:

CLASS-ROOM WORK.—The class-room work in agriculture has been carried out in accordance with the plan published in the catalogue. The agricultural instruction covers two terms during the four years' course, and one



hour a day during each term. The work in agriculture begins with the second-year class, in the winter term, and continues through the entire 12 weeks of that term. The subjects treated are, first, a brief discussion of the history of agriculture, by rapidly tracing the development of the art from ancient times to the present; and, secondly, the development and characteristics of the leading breeds of our domestic animals, including, however, only horses, cattle, sheep, and swine. The aim is to acquaint the student, not only with the outward and obvious features of the breeds, but also with the conditions under which they were developed, the men who were instrumental in this development, and their adaptation to the various conditions under which farming and stock breeding are carried on in this country. It is a large subject, and justice can scarcely be done it in the time at our disposal for its consideration. The second-year class has been large in both of the years covered by this report, and I have had the class in two divisions each year. During the term beginning in January, 1891, the class numbered 71 members, and last winter term the class had 87 members.

The second and concluding term in agriculture is the fall term of the fourth year. I have, in this term, given instruction in stock breeding and stock feeding, arrangement and construction of farm buildings, and, as far as the time permitted, also in farm management, including rotation of crops and use of manures. The instruction has been by lectures in all cases, except that Miles's Stock Breeding was used as a text during the fall term of 1890. In that year my class numbered 30, and in 1891 it contained 33 members.

I have during this period read papers at 10 farmers' institutes and six other meetings of farmers and stock breeders in various parts of the State. I have also had a large correspondence to attend to, partly in connection with the business of the department, but chiefly from farmers and stock raisers who have been interested in our experiments or who desired information on farm matters. This correspondence demands a large share of my time, and all of it is of a nature that requires my personal attention. I look forward to the time when a stenographer may be available to aid me in this work.

STUDENTS' INDUSTRIAL WORK.—The plan for industrial work on the farm set forth in the catalogue has been carried out. As far as possible this work has been planned with a view to make it instructive to the student. This is more especially true during the past year, when bright, fourth-year students have been engaged, at an advanced rate of pay, as leaders and instructors in the work. The "industrial" students thus assist in all the experimental work, and they have the opportunity to get the fullest information on the character and scope of the experiments in hand. Part of the time which they are thus required to spend on the farm is devoted to "scoring" or judging the several breeds of live stock on the farm, in order that they may thus practically become familiar with the good and bad points in the stock, and learn how to point them out.

But in addition to the small amount of required work, very many of the

students put in their spare hours at work on the farm. This is true to such an extent that, with the exception of the herdsman and one or occasionally two teamsters, who are hired by the month, all the work on the farm is done by students. It is with no little satisfaction that I am able to make this statement; for it is not only an aid to those of them who need the money they earn there, but they incidentally learn much that will be of value to them, although they may not be aware of it at the time, and it shows the healthful, self-reliant spirit pervading the institution, which is refreshing when compared with the dilettanteism and scorn of manual labor not uncommon at higher institutions of learning. This system is somewhat more costly, it is true, than if the work was done by hired hands. It requires more superintendence and more tools, there is somewhat more waste of time, and in many instances less speed in the work, and it thus augments the labor bill; but I believe that all who have studied the question agree that the gain to the student overbalances the loss to the institution.

THE FARM AND EXPERIMENTAL WORK.—The two subjects are so intimately connected that they may best be treated together. The entire farm is devoted to experimentation. All the wheat, corn, oats, and whatever else is grown, is under experiment. For details of this work, I would respectfully refer you to the seven bulletins which have been issued by this department during the period covered by this report. Work done the present year, or which is in progress, will furnish material for about five more bulletins.

It will readily be seen that this plan necessitates very much more work, both in the office and in the field, than would be called for by the ordinary system of business farming. And although the work on experimental crops is charged to the Experiment Station, and the crops in turn credited to the Station, there is nevertheless a loss to the farm which must show in the account, in that it prevents any profit from being made on the crops. This will in large measure account for the deficit shown in the financial statement.

The farm is too small for the needs of the College. It has been necessary, as you are aware, to rent a field from an adjoining farm for experimental purposes. Aside from this rented land, the Farm Department has only about 180 acres under its control, including site of barn, yards, and necessary lots, and several acres of waste land in a slough, and upwards of 30 acres of the remainder are entirely unfit for culture, being rocky and hilly. To give the work the scope that it, in my estimation, ought to have, the farm could use 200 acres more to advantage. At no other agricultural college in the West is the farm so small as at this College.

THE HERD.—The herd numbers at present 54 head, inclusive of some young stock, all of which are pure-bred, recorded animals. It represents five breeds, namely: Short-horns, Herefords, Aberdeen-Angus, Jerseys, and Holstein-Friesians. It has been my constant aim to improve the herd by disposing of females past their prime, and in their place retaining the finest heifers for breeding. Each of the above-named breeds has some excellent repre-

sentatives in the herd. Prices have ruled low for the stock that has been sold, and part of the deficit shown in the account is due to the depreciation of thoroughbred stock, which has been so general everywhere during the last years. The head of the Short-horn herd has been changed twice during the past two years. Col. W. A. Harris, of Linwood, Kas., gave us in the first place imported Royal Pirate in exchange for Scottish Chief, and later he gave us imported Craven Knight in exchange for Royal Pirate. This was a generous act on his part, since Craven Knight is one of the finest Short-horn bulls in the West, and although still young he has already gained a high reputation as a sire.

The Jersey herd has also undergone a change for the better, in that cows registered in the American Jersey Cattle Club Herd Register have taken the place of the old Herd Book stock, for which there was no demand. Three cows have died during the two years. One of them succumbed to impaction of the manifolds, caused by pasturing on dry blue-grass during the drought of 1890.

SWINE.—Only two breeds of swine are represented on the farm, namely, Poland Chinas and Berkshires, and for want of a suitable piggery only a few of these can be kept. In accordance with your order, I have disposed of several of the old sows which had become indifferent breeders, with a view of replacing them with younger ones in the fall.

SHEEP.—In 1890 a small start was made in Shropshires, by the purchase of two ewes and a fine imported ram. The object was to rear a flock of this breed in order to test their adaptation to Kansas, while they at the same time served as object-lessons to the students. The ewes have persistently dropped ram lambs; but by exchanging some of the latter, the flock now contains five females. The College has no sheep barn, and it was found necessary to take two of the six pens in the piggery for their accommodation.

PERMANENT IMPROVEMENTS accruing to the joint benefit of both farm and Experiment Station have been effected by the building of a seed room in the northeast corner of the barn, and a lean-to shed for the shelter of implements on the east side of the corn crib.

NEEDS OF THE FARM.—Although the statement has been made in the reports of the Farm Department for several years past, I venture to repeat that the department is sadly in need of a farm house; also, that there is pressing need of a piggery, and a small sheep barn, and that the experimental work of the department could be made vastly more effective if it had more land at its disposal.

Respectfully submitted, C. C. GEORGESON,
Professor of Agriculture, Superintendent of Farm.

DEPARTMENT OF HORTICULTURE AND ENTOMOLOGY.

To the Board of Regents:

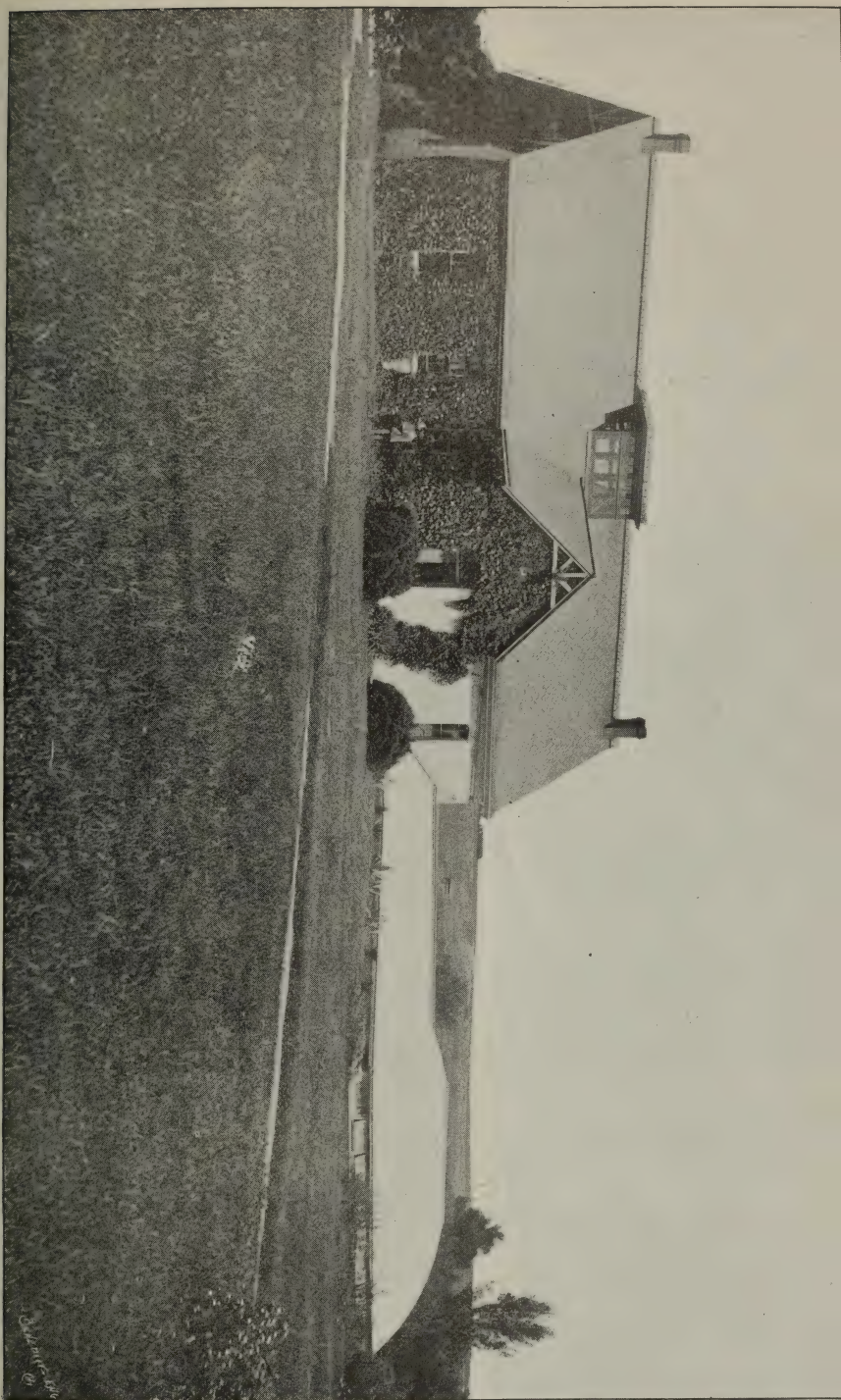
GENTLEMEN—I have the honor to submit the following report upon the work done in the Department of Horticulture and Entomology for the two years ending June 30, 1892.

The classes in my charge have been unusually large, and the special assignments numerous and varied, as is shown in the tabular synopsis here following:

CLASSES, 1890-'91.		Young women.	Young men.	Total.
Fall, 1890—Horticulture,	second year.....	44	66	110
"	Required industrial, third year.....		35	
"	Special " fourth year.....		2	
"	Greenhouse work.....		2	
	Entomology, special.....		1	
Winter, 1891—Horticulture,	special industrial.....		12	
"	Greenhouse work.....		4	
"	Office work.....		3	
	Entomology, special.....		3	
Spring, 1891—Horticulture,	special industrial.....		8	
"	Required industrial, second year.....		57	
	Entomology, second year.....	41	73	114
CLASSES, 1891-'92.				
Fall, 1891—Horticulture,	second year.....	39	80	119
"	Required industrial, third year.....		48	
"	Special " fourth year.....		3	
"	Greenhouse work.....		1	
Winter, 1892—Floriculture,	fourth year.....	10		
	Horticulture, special industrial.....		6	
"	Office work.....		1	
	Entomology, special.....		1	
"	Museum work.....		2	
Spring, 1892—Horticulture,	required industrial, second year.....		68	
"	Special.....		2	
	Entomology, second year.....	25	52	77

The work in the regular classes has been as outlined in various reports. The classes in horticulture have had a course of lectures covering the fundamental principles and operations in that art; the classes in entomology have studied a text-book, supplemented by lectures on special economic phases of the science; and the class of young ladies in floriculture have divided the time of the winter term between a series of lectures and the accompanying practice. This work in floriculture, newly organized for the young women of the fourth-year class, is designed to acquaint them with the important details in the preparation and care of ornamental plants, especially for home adornment, and with the main features of greenhouse management. A series of lectures, covering about one-half the time, expands, for the present needs, the principles of propagation treated in the horticulture of the second year, discusses the art of plant management, and briefly reviews families of plants most important to the florist. The remainder of the time is occupied by the practice, in the greenhouse, of the methods recommended in the lectures. The course meets with the general commendation of those for whom it was designed.

HORTICULTURAL HALL AND GREENHOUSE.



W. H. H. 1890

In the direction of the classes in industrial horticulture, I must record the continued faithful and efficient service of Assistant S. C. Mason, and in the immediate oversight of field-work, the capable assistance of students of third and fourth years.

THE GROUNDS.—The care and maintenance of the roads, lawns and ornamental plantations have remained with this department, and have demanded no inconsiderable portion of time, with commensurate expense. The most important improvements I will briefly describe. An ample and substantial walk has been constructed from an entrance to the grounds facing Bluemont avenue, to the front of the main College building, with a branch to the fork of the main driveway, a total length of 1,651 feet. This walk is six feet wide and eight inches deep, the body of broken stone, curbed with cypress lumber, and dressed with graded coal cinders. The construction includes five stone culverts to accommodate the surface drainage. Six acres of plowed land at the foot of this walk have been brought into the lawn, thoroughly graded, leveled, and seeded down, and over 600 trees and shrubs, deciduous and evergreen, have been planted in proper groups, as demanded by this further elaboration of the original plan of the grounds. The driveway leading from the President's dwelling to the entrance directly east has been covered with gravel throughout; and most of the other driveways have been newly graveled by way of repairs. Near the front of the main College building, along the curve of the principal drive, the lawn has been protected by 150 feet of stone curbing, and necessary regrading done.

ORCHARDS AND GARDENS.—Much of the work in this line is already reported through the publications of the Experiment Station, but some features may be properly included here.

The most prominent improvement, of which the preliminaries were stated in my report to the Board for 1889-'90, is the planting of an experimental apple orchard on the lower College farm, on the site of the old "north orchard." After the cultivation of the ground for an intervening season in corn, the same site was thoroughly plowed and subsoiled to the depth of 18 inches, and the following spring was planted to apple trees, one and two years old. In this planting are 410 trees, representing 59 varieties and four modes of propagation, with provision for future sample trees of other varieties by top-working on Ben Davis stocks.

As a basis for more extended experiment with peaches, a beginning of a peach orchard was made, by planting 93 trees of 21 varieties on both peach and plum stocks. The area planted was first thoroughly prepared by subsoiling to the depth of 18 inches. Russian plums, two to four trees each of eight varieties, and Russian cherries, one to three trees each of 29 varieties, formerly growing in nursery rows, have been transferred to permanent places in the orchard. In the vineyard there have been placed two vines each of 33 varieties not hitherto on our list. Among them, some undistributed sorts of recent origin, and among the most promising of the newer fruits. Thirty-

five sorts have been added to the list of varieties of the strawberry in cultivation on our grounds, and the plantations of this fruit have been extended with a view to cultural experiments. For detailed lists of these and other additions, and for a statement of work in other lines, those interested may consult the reports of the Experiment Station.

OFFICE AND MUSEUM.—The most important addition to office apparatus comprises two Zeiss compound microscopes No. IV, each provided with Abbe condenser, three objectives, four oculars, double rose-piece, and Abbe long-arm camera lucida; and two improved Meyer dissecting microscopes, each with aplanatic lenses, giving powers of 6 and 10 diameters, and compound erecting body with a range of 15 to 100 diameters. These were purchased for the use of special students in entomology, and have proved a most judicious investment.

In the museum, the principal expenditure has resulted in remodeling the old wall cases, to the great increase in illumination, and in the construction of four floor show-cases with 80 boxes, for the display of an illustrated systematic collection and the biological collections in entomology.

Following are separate financial exhibits for the two years covered by this report:

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1891.

<i>Expenditures.</i>		
Cash paid out on vouchers.....	\$4,372 19	
Department bills.....	476 32	
Appropriation.....	500 00	
		\$5,348 51
This total is approximately distributed as follows:		
Grounds.....	\$1,831 44	
Orchards and gardens.....	803 08	
Team.....	280 04	
Tools.....	290 07	
Supplies and repairs.....	397 90	
Greenhouse.....	486 42	
Museum repairs and supplies.....	574 59	
Office assistance, apparatus, and supplies.....	407 33	
Instruction supplies.....	181 15	
Students' supplies.....	96 49	
<i>Receipts.</i>		
Cash paid to Treasurer.....	\$877 63	
Department credits.....	500 00	
Inventory increase.....	823 68	
		\$2,201 31
Balance, cost of maintaining department, care of grounds, and permanent improvements not inventoried.....		3,147 20
Total.....		\$5,348 51

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1892.

<i>Expenditures.</i>		
Cash paid out on vouchers.....	\$4,183 17	
Department transfers.....	263 43	
		\$4,446 60
This total is approximately distributed as follows:		
Grounds.....	\$1,728 35	
Orchards and gardens.....	772 88	
Teams, purchase and care.....	532 85	
Tools.....	157 69	
Supplies and repairs.....	275 99	
Greenhouse.....	240 65	
Museum repairs and supplies.....	217 22	
Office supplies and assistance.....	172 60	
Instruction, supplies used in.....	227 13	
Supplies bought to sell to students.....	121 24	

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1892—CONCLUDED.

<i>Receipts.</i>		
Cash paid to Treasurer.....	\$527 19	
Increase in inventory.....	943 68	\$1,470 87
Balance, cost of maintaining the department, care of grounds, and permanent improvements not inventoried.....		2,975 73
Total.....		\$4,446 60

All of which is respectfully submitted.

E. A. POPENOE,

Prof. of Horticulture and Entomology, and Supt. of Grounds and Gardens.

COLLEGE, June 30, 1892,

BOTANICAL DEPARTMENT.

To the Board of Regents:

GENTLEMEN—The class-work for the year 1890-'91 and the number of students taught in the Botanical Department are indicated in the following tabulation:

<i>Term.</i>	<i>Subject.</i>	<i>Students.</i>
Fall.....	Botany (elementary).....	41
Fall.....	Special botany.....	1
Fall.....	Industrials.....	3
Fall.....	Physiology (one-half term).....	54
Winter.....	Structural botany.....	54
Winter.....	Industrials.....	4
Spring.....	Elementary botany.....	137
Spring.....	Special botany.....	1
Spring.....	Industrials.....	1

The class in physiology was taught by me only the first half of the term—Professor Mayo taking the class when he began college work the 1st of November. As usual for the past few years, the class in elementary botany was divided into three sections, which were taught during three consecutive hours.

The unusually large class in structural botany necessitated its division into two sections, and instruction was given each separately two hours daily during the winter term. I think it would be desirable to furnish somewhat more extended facilities for study in this line, and charge each student a small fee for breakage and other loss in the use of the apparatus, as is done in chemical and other laboratories.

The herbarium has steadily grown in size and usefulness. Many specimens from the vicinity of Manhattan have been added to it during the year; also many—especially fungi—collected in various parts of the State. Students and others have also contributed a number of specimens. The additions to the general herbarium during the year numbered 1,332, and to the State herbarium 688 specimens. There are at present 3,592 specimens in the

former and 2,822 in the latter, or a total of 6,414 specimens mounted. The specimens purchased of Mr. Harry Bassler (2,000 herbarium specimens and about the same number of duplicates) have not yet been mounted and placed in the herbarium.

The work of the Experiment Station has, as heretofore, occupied a large portion of my time. The valuable assistance of Mr. W. T. Swingle was lost May 1, by his resignation as assistant, to accept, at a much advanced salary, a position as special agent in the investigation of plant diseases, at Washington, United States Department of Agriculture, division of vegetable pathology.

Miss Emma A. Allen, a graduate of this College, was then employed to do a portion of the laboratory work, but unfortunately, after a few weeks of excellent service, she succumbed to a fatal pulmonary disease. Mr. C. H. Thompson, a second-year student, did the main part of the assistant's work, and a few others (students) were also hired from time to time, as necessity demanded.

Bulletins embodying the work of the department were issued, as follows: No. 12, August, 1890, Preliminary Experiments with Fungicides for Stinking Smut of Wheat; No. 15, December, 1890, Additional Experiments and Observations on Oat Smut made in 1890; No. 17, December, 1890, Crossed Varieties of Corn, Second and Third Years.

The practical completion of a first-class culture room, and the addition of important pieces of apparatus and valuable literature, have put the department in condition to do superior work in experimentation and investigation. An account of the expenditures of the department can be seen by consulting the books of the Secretary.

July and August, 1891.—The undersigned, presenting his resignation as Professor of Botany, to take effect September 1, 1891, in order to accept the Professorship of Botany in the Ohio State University, (Columbus, Ohio,) submits the following additional report covering the work of the department during the months of July and August, 1891:

As there were no College classes to teach during this time, only work directly or indirectly connected with the Experiment Station was carried on. Notes and records were kept as heretofore concerning the matters immediately under experimentation and botanical subjects generally, but more particularly in regard to fungi of economic interest.

Mr. C. H. Thompson assisted efficiently during the entire time, and Mr. G. K. Thompson and other students gave valuable assistance during a large portion of the same period. The extensive experiments in connection with a study of fungicides for stinking smut of wheat, smut of oats, loose smut of wheat, smuts of sorghum, corn smut, and spraying to prevent wheat rust, were all completed during the two months. The results of all these are contained in Bulletins Nos. 21, 22, and 23, August, 1891.

The experiments in improving ears of corn are still under way and incom-

plete, but the records are complete to date, and the work can be carried forward by my successor, if desired.

After eight years of service for the State, the best in quality and the largest in quantity that I was capable of furnishing, it is a great pleasure that I can retire with the expressed approval of my work by the members of your honorable Board, by my co-workers in the College, and by the students in whose behalf especially I have labored.

The continued and even greater prosperity of the College is my sincere wish.

Very respectfully,

W. A. KELLERMAN,

COLLEGE, September 1, 1891.

Professor of Botany.

To the Board of Regents:

GENTLEMEN—My connection with the College dates from January 1, 1892. The winter-term class in structural botany consisted of 43 students, in two divisions. The spring-term class in elementary botany, numbering 149, was divided into three sections. During the winter term there were four taking special industrial training in botany. One post-graduate student has done advanced work during the year, and two students of the fourth-year class used the facilities of the laboratory in the preparation of their theses.

My entire cryptogamic collection, and also my duplicate flowering plants, have been turned over to the College and are now being mounted for the herbarium.

The work of the Experiment Station has proceeded chiefly along three lines: The investigation of grain rusts, in which my assistant, Mr. M. A. Carleton, is especially interested; the action of fungicides on the germinating power of corn; and the life-history of our weeds.

Respectfully submitted,

A. S. HITCHCOCK,

COLLEGE, June 30, 1892.

Professor of Botany.

CHEMICAL DEPARTMENT.

To the Board of Regents:

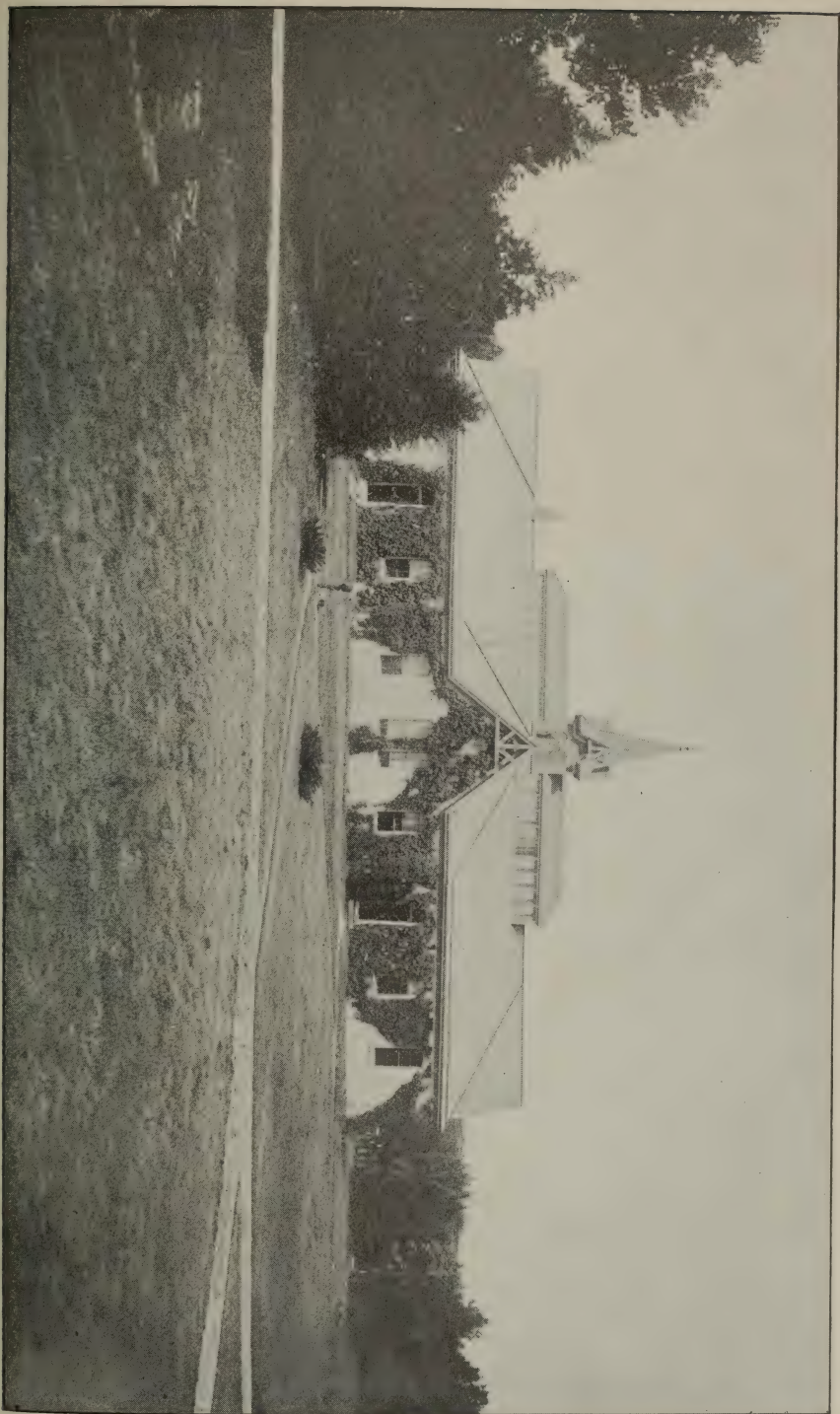
GENTLEMEN—The tabular statement given below shows the classes in the Chemical Department during the two years covered by this report, 1890-'91 and 1891-'92:

1890-'91—Fall Term.	En-rolled.	Exam-ined.	Passed.
Inorganic chemistry.....	114	105	98
Special chemistry.....	2	.....	2
<i>Winter Term.</i>			
Organic chemistry.....	103	101	86
Mineralogy.....	99	96	86
Agricultural chemistry.....	50	48	48
Special chemistry.....	2	.....	2
<i>Spring Term.</i>			
Chemical analysis.....	84	83	71
Special chemistry.....	2	.....	2

1891-'92—Fall Term.		En- rolled.	Exam- ined.	Passed.
Inorganic chemistry.....		141	129	107
Special chemistry.....		5		5
<i>Winter Term.</i>				
Organic chemistry.....		110	102	82
Mineralogy.....		106	104	96
Agricultural chemistry.....		53	51	51
Special chemistry.....		5		5
<i>Spring Term.</i>				
Chemical analysis.....		87	87	84
Special chemistry.....		6		5
Geology.....		32	32	32

During the year 1890-'91 the class-work was similar to that of previous years, and has been sufficiently explained in former reports. Because of the number in the second-year class during the year 1891-'92, more sections than formerly were found desirable. In the fall term there were three sections for the purpose of recitation, and two sections in chemical practice. In the winter term a somewhat important change was made in the order of classes, as well as in the number of sections. This class has organic chemistry half of the winter term, and mineralogy and blow-pipe study of minerals the other half term. Heretofore there have been two sections of the class. They had lectures in organic chemistry the first half of the term, and mineralogy and blow-piping the last half. The last year, we made four sections of the class, two having the work as just explained, the other two taking it in reverse order, having the mineralogy the first half and the organic chemistry the last half of the term. These classes, with the third-year class in agricultural chemistry, gave seven classes daily in the department. Professor Willard had charge of those in organic chemistry; Mr. Breese of those in blow-piping, while I met the classes in mineralogy and agricultural chemistry.

In the spring term the class in analytical chemistry came into the laboratory in two sections, each working two hours daily. It has been the constant aim to so shape this course as to supplement the previous study rather than to make technical analysts. In furtherance of this, we so modified the course as to first give known substances and require the students to go through the analytical process, carefully comparing the observed phenomena with the anticipated action. This course is specially suited to students of the advancement of our second-years, who have not yet been trained to see things. All were required to take full notes and to work up the chemistry of the transformations effected by their reagents. As an important part of this study of results, they were met twice per week in four sections in the lecture room for recitations, explanations, and comparisons. They were also specially assisted in the use of reference books, which were kept on convenient tables for this purpose. Thus more use was made than formerly of our chemical books. Professor Willard met four of these classes per week; I met four of them per week, and the geology class daily; other hours we gave to the work constantly going on in the analytical laboratory; Mr. Breese was with those working in the latter



CHEMICAL LABORATORY.

room all the while. Professor Willard has had charge of the special students in chemistry throughout the year.

As heretofore, Mr. Breese has collected and analyzed the rain-water, and has assisted in the analysis of sorghum and sugar beets, already reported upon in bulletins of the Experiment Station. He has had a permanent place in instructing the classes in chemical practice.

You authorized me to complete the collection of minerals and rock specimens, as previously planned, but postponed for lack of funds. They are all in place in cases which have been partially constructed within the last two years. The collection as it now stands is a very valuable one for our work, and is at the same time somewhat showy. We are making special collections in Kansas, and expect to put up a case of distinctively Kansas minerals, in addition to giving them a place in the main collection. We are also making a collection of the rocks and other building materials of Kansas.

Our principal need is more books. We should have several sets of periodicals, which cost so much that we have not felt justified in trying to obtain them from the small appropriations for the library.

Respectfully submitted, G. H. FAILYER,

COLLEGE, June 30, 1892.

Professor of Chemistry.

To the Board of Regents:

GENTLEMEN—My part in the work of instruction in chemistry during the past year has been as follows:

The immediate direction of the special students of chemistry has been in my charge throughout the year. There were five of these students during the fall term, four in the winter, and six in the spring. Four of these were post-graduate students. One of the under-graduate students studied quantitative analysis, and one of the post-graduates took a preliminary course in assaying. The other four were engaged in a course of experimental inorganic chemistry, accompanied by study of the larger text and reference books. Recitations two hours per week were an important part of this course, in which the aim is not only the acquisition of facts new to the student, but a broadening and generalization of his ideas of chemistry. All of the special students attended these recitations and manifested a very encouraging interest in the work. This course is regarded as fundamental to lines of special chemical work relating to any of the arts, or to advanced study of chemistry itself. Renouf's translation of Volhard's "Experimental Chemistry" is used as a guide in the laboratory work.

During the winter term I taught the four classes in organic chemistry, two of these coming in each half of the term under the new arrangement of classes. In the study of this subject, we are much hampered by the lack of a text-book suitable to our needs; that is, one in which the most important carbon compounds met with in every-day life are treated somewhat fully, in a general way, while at the same time their chemical nature and their relations to each other and to the inorganic compounds are simply and distinctly

brought out. Being obliged to teach the subject by lectures, it is impossible to cover the ground at all adequately in the limited time allotted. There were 110 enrolled during the term.

During the spring term I had a share in the instruction in analytical chemistry in the laboratory, and taught two of the four divisions which met in the lecture room for recitation and instruction. Each division met twice a week. In these classes the object was to bring out as simply and clearly as possible the nature of the chemical reactions observed in the laboratory.

As assistant chemist of the Experiment Station, a large share of the chemical work connected therewith has been in my charge, as heretofore.

Respectfully submitted, J. T. WILLARD,

COLLEGE, June 30, 1892.

Assistant Professor of Chemistry.

DEPARTMENT OF PHYSIOLOGY AND VETERINARY SCIENCE.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report, beginning November 1, 1890, at which time I became connected with the College, and ending June 30, 1892.

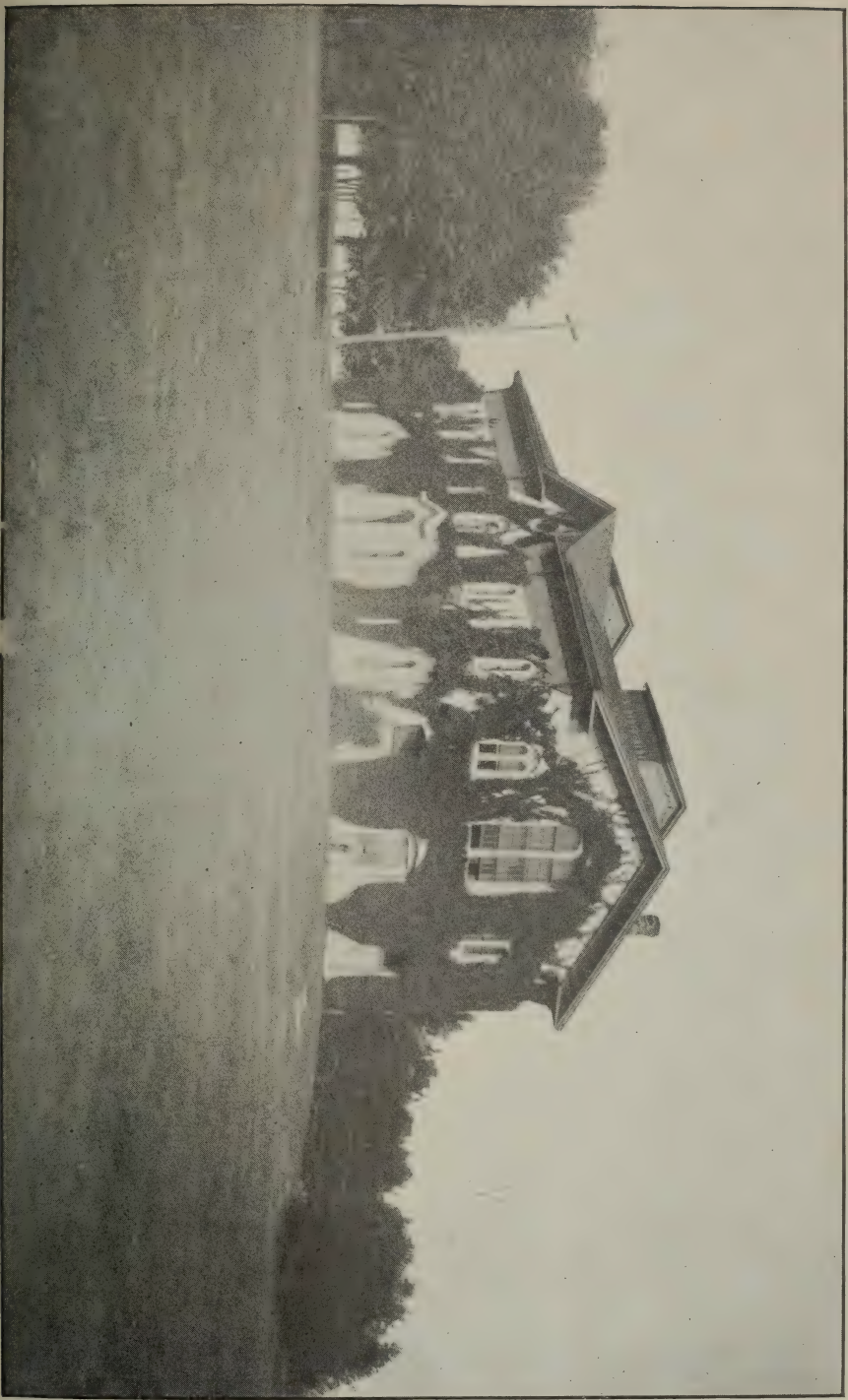
In the class-room I have taught classes as follows:

<i>Year.</i>	<i>Term.</i>	<i>Class.</i>	<i>Study.</i>	<i>No. of Students.</i>	<i>Divisions.</i>	<i>Young women.</i>	<i>Young men.</i>
1890....	Fall.....	Third year...	Physiology.....	54	1	14	40
1891....	Winter....	Fourth year...	Zoölogy.....	56	2	25	31
1891....	Spring....	Fourth year...	Geology.....	55	2	23	32
1891....	Fall.....	Third year...	Physiology.....	61	2	22	39
1892....	Winter....	Fourth year...	Zoölogy.....	31	1	10	21
1892....	Winter....	Fourth year...	Veterinary Science....	27	1	.....	27

For two weeks of the winter, 1891, lectures in veterinary science were given to the young men, the young women doing special work in zoölogy. As two weeks' time was not sufficient to do justice to the subject, on the rearrangement of the course of study, a whole term of 12 weeks was devoted to veterinary science. Instruction is given by lectures, and includes the following subjects: Hygiene and nursing of sick animals; wounds and their treatment; the more common ailments of stock and their treatment; minor surgical operations; examination for soundness, and horse judging. It is intended to make this course as practical as possible, and to this end cases are brought before the class and students required to assist.

In physiology, especial attention is paid to comparative physiology. The use of skeletons, manikin, and the actual dissection of a small animal, are of especial importance.

In zoölogy, the usual text-book is still in use, but is not followed closely. The common forms of life and their habits are studied and compared, and drawings made of many, in order to familiarize the students with them.



VETERINARY LABORATORY AND DRUG HALL.

Experimental work with animal diseases is necessarily slow, from the nature of the case, and the uncertainty of getting suitable material.

The greatest need of the department is more suitable room, as it is with

much difficulty that satisfactory work is performed in the present limited quarters, there being no suitable laboratory and work room.

Respectfully submitted, N. S. MAYO,

COLLEGE, June 30, 1892.

Professor of Physiology and Veterinary Science.

DEPARTMENT OF HOUSEHOLD ECONOMY AND HYGIENE.

To the Board of Regents:

GENTLEMEN—The following report of the work done in the Department of Household Economy and Hygiene during the two years ending June 30, 1892, is respectfully submitted:

During the year ending June 30, 1891, I taught—beside carrying on my own work—a class in English literature and two classes in arithmetic. The past year, however, the Domestic Department has kept me fully occupied. The work has grown in many ways, and while no more thorough work perhaps may be claimed for one year than for another, the work changes with the demands of the students. The lunches for other days than Friday have crept in, and more dainty dishes have been cooked this year than ever before.

During the fall term the forenoon hours were filled by classes in post-graduate work and students who took cooking as their industrial. The post-graduate students take one subject and work upon it until they become perfectly familiar with the art, and many hours are spent in learning the history, the chemistry and the uses of the food coming under that particular head. In this way breads, meats, salads, pastry, etc., were given new meanings and new uses to students.

The young women who took cooking as a special industrial had all been through the regular second-year course in household economy. Ten chose this work for the fall term. They began work with fruit canning and preserving, making jellies, jams and pickles until the fruit season was over. The remainder of the year these same students made fancy breads, nice cake, mince-meat, and dainty desserts, interspersing at various times such work as was needed by the department. They cooked meats to some extent, and were given training in the selection of meats by having an ox cut up before the class, while every piece with its uses was explained.

During each term a meal is served for the Regents and the Faculty. In the fall term this meal was a breakfast, in the winter a five-course dinner, and in the spring it was a tea. The post-graduate students presided at the tables, and the members of the industrial classes waited upon the guests.

During the winter terms the regular second-year class in household economy numbered 36 in 1891 and 35 in 1892. This class listens to a lecture one hour each day, and comes to the kitchen laboratory for actual work during the second hour devoted to this branch of study. The lectures cover,

briefly, the general topics of interest in kitchen and dining-room, foods being the center of thought.

The laboratory practice is carried on as in years past, by having the work planned so that a Monday dinner and a Friday lunch are a part of the results. The Monday dinner is served for a few members of the Faculty, who pay for it, and members of the class cook it and wait upon the table. The Friday lunch is disposed of to students, who buy the 10-cent tickets on Thursday, which entitle the holder to a plate of lunch and a cup of coffee on Friday. In this way all the food cooked is readily disposed of, and the funds obtained nearly cover the cost of cooking materials used.

During the winter term a hot lunch is served to members of the fourth-year class on Wednesday, which is paid for at the usual 10-cent rate.

The fact that the cooking is done for some special people adds a degree of interest to the work, and gives an element of pride in the article cooked which goes far toward making this work pleasant and profitable.

The spring term brings the class of third-year girls in hygiene, when they study themselves as much as possible and take thought as to the mental and moral as well as physical well-being of the women they are to become. They write essays upon various subjects pertaining to the homes as well as to the individuals.

The second-year young women have training four hours each week in dairy work. The year ending June 30, 1891, the class numbered 36, and made 267 pounds of butter. The past year there were but 27 in the class, and they made 216 pounds of butter.

Each year two or three 10-pound cheeses were made, and cottage cheese was made several times.

The following tables will show to some extent the direction of expenditures during the past two years:

	1890-'91.	1891-'92.
Materials for cooking.....	\$357 25	\$267 69
New equipment.....	122 45	132 76
Paper.....	4 20	2 55
Ice.....	7 00	5 79
Repairs.....	2 30	2 50
Student labor.....	28 80	90 85
Milk from farm department.....	77 66	70 78
<i>Cash.</i>		
Lunches and dinners.....	\$257 55	\$202 40
Butter sold.....	48 30	43 20
Increase of inventory.....	111 09	114 61
Canned fruit.....		9 00
Cash due department.....		16 30

Less money has been spent for materials, even when quite as much work has been accomplished, during the past year, because we find that methods are as well taught by small quantities as by large dishes.

It may be of interest to know that during one year the \$357 spent for materials for cooking was divided in about this proportion: \$68 was spent for

meat, \$29 for eggs, \$29 for butter, \$30 for flour, \$39 for sugar, and \$9 for coffee.

During the two years there have been afternoon classes in both winter terms and both spring terms to accommodate post-graduate students. One, a young lady who is teaching domestic economy in the S. Dakota Agricultural College, comes here during the winter for further work in her chosen line. In addition to the good work done by this post-graduate student in the Dakota College, we take pride in the graduate of 1888, who is professor of household economy and hygiene in the Utah Agricultural College, and the graduate of 1891, who is teaching cooking in the public schools of Menomonic, Wis.

My work outside the regular department work has been about as usual. I have attended four farmers' institutes, have done my share in committee work, have filled my place on the list of *Industrialist* editors, and have taken my turn in the public lectures.

The money given for new apparatus in the department has increased the facilities for good work, and I feel that the class of work done grows more helpful each year to the young women of the State.

Respectfully submitted,

NELLIE S. KEDZIE,

COLLEGE, June 30, 1892.

Professor of Household Economy and Hygiene.

DEPARTMENT OF PHYSICS AND METEOROLOGY.

To the Board of Regents:

GENTLEMEN—The following table shows the class work done by me during the biennial period 1890-'92:

CLASS WORK, 1890-'91.

Term.	Hour.	Subject.	Gentlemen.	Ladies.	Total.
Fall term.....	Second.....	Physics.....	16	12	28
	Third.....	Arithmetic.....	22	16	38
	Fourth.....	Physics.....	16	9	25
	Fifth.....	Telegraphy.....	7	.....	7
	Totals.....	.....	61	37	98
Winter term....	First.....	Telegraphy.....	11	3	14
	Second.....	Geometry.....	24	7	31
	Third.....	Telegraphy.....	16	6	22
	Fourth.....	Book-keeping.....	25	24	49
	Fifth.....	Telegraphy.....	17	1	18
	P. M.	Physical measurements.....	4	.....	4
	Totals.....	.....	97	41	138
Spring term....	First.....	Algebra.....	33	11	44
	Second.....	Solid geometry.....	20	8	28
	Third.....	Physics.....	20	6	26
	Fourth.....	Physics.....	14	7	21
	Totals.....	.....	87	32	119

CLASS WORK, 1891-'92.

<i>Term.</i>	<i>Hour.</i>	<i>Subject.</i>	<i>Gentle- men.</i>	<i>Ladies.</i>	<i>Total.</i>
Fall term.....	First.....	Algebra.....	17	13	30
	Third.....	Physics.....	16	7	23
	Fourth.....	Physics.....	10	3	13
	Totals.....		43	23	66
Winter term....	First.....	Book-keeping.....	32	12	44
	Second.....	Geometry.....	18	12	30
	Third.....	Algebra.....	17	16	33
	Fourth.....	Algebra.....	35	6	41
	Totals.....		102	46	148
Spring term....	First.....	Algebra.....	29	4	33
	Second.....	Solid geometry.....	12	11	23
	Third.....	Physics.....	20	7	27
	Fourth.....	Physics.....	14	7	21
	Totals.....		75	29	104

In addition to the above, during the year 1891-'92, I have taken the meteorological observations. Counting the hour necessary for the arrangement of the apparatus for experiments in physics and the time required for the weather observations, I have taught the equivalent of from five to six hours each day. This, in connection with the variety of subjects taught the first year, left me too little time for the general reading required in so rapidly a growing science as physics. The abolishing of the telegraph department at the end of the year 1890-'91 has relieved me from the instruction and care of that department, and allowed me to concentrate my time more closely on the physics department. I was assisted in the work of instruction in telegraphy by Miss Bertha Bacheller, '88, all the year, and by Mr. E. Clay Coburn, '91, in the spring term.

The students, almost without exception, seem earnest and anxious to learn, and have been kind and considerate at all times.

The following table shows the financial condition of the department:

FINANCIAL STATEMENT, 1890-'91.

	<i>Dr.</i>	<i>Cr.</i>
Appropriation, physical apparatus.....	\$500 00	
Increase fund:		
Physical apparatus.....	64 32	
Telegraph apparatus and supplies.....	63 73	
Freight.....	24 48	
Labor, telegraph and bells.....	135 60	
Meteorologic records.....	152 12	
Telephone rental.....	40 00	
Department transfers.....	56 81	
Cash telegraph tuitions.....		\$249 50
Inventory increase.....		45 43
Balance expense.....		742 13
Totals.....	\$1,037 06	\$1,037 06

FINANCIAL STATEMENT, 1891-'92.

	Dr.	Cr.
Apparatus	\$135 89	
Freight	13 85	
Department transfers	3 65	
Labor, meteorologic records and bells	96 73	
Cash sales, telegraph department		\$13 60
Department transfers		95 30
Inventory increase		18 30
Balance expense		122 92
Totals	\$250 12	\$250 12

The large expense balance is due to the following items: When Assistant Chemist C. M. Breese took charge of the meteorological observations and records, he found that the averages in the records were inaccurate, in many cases, and the older records needed copying into suitable books. A considerable labor has been put on these records each year. The telephone rental was paid out of this department, though the telephone was for the use of all departments. It has since been transferred to the executive department. The care and expense of the electric bells and line is borne by this department. When the telegraph department was abolished, the labor of putting up the line was lost, and the apparatus was inventoried at a figure at which it was thought the apparatus would sell. The subjoined comparative table of inventories shows that the physical apparatus proper has increased in proportion to the amount expended, while the telegraph apparatus has decreased nearly the same amount, as explained above.

INVENTORY.	1890.	1891.	1892.
Physics	\$2,973 37	\$3,337 15	\$3,545 10
Telegraph and bells	812 10	493 75	304 10
Totals	\$3,785 47	\$3,830 90	\$3,849 20

Respectfully submitted,

ERNEST R. NICHOLS,

COLLEGE, June 30, 1892.

Professor of Physics.

DEPARTMENT OF MATHEMATICS.

To the Board of Regents:

GENTLEMEN—The following statement will show the enrollment of students in the classes under my instruction for the biennial period closing June 30, 1892:

CLASSES.	1890-'91.			1891-'92.		
	Ladies.	Gentle- men.	Total.	Ladies.	Gentle- men.	Total.
<i>Fall Term:</i>						
Trigonometry (two divisions)	11	34	45	16	42	58
Algebra (two divisions)	41	57	98	23	65	88
Surveying practice	11	34	45	16	43	59

CLASSES.	1890-'91.			1891-'92.		
	Ladies.	Gentlemen.	Total.	Ladies.	Gentlemen.	Total.
<i>Winter Term:</i>						
Geometry (two divisions).....	24	42	66	22	51	73
Algebra (two divisions).....	27	56	83	23	51	74
<i>Spring Term:</i>						
Solid geometry (two divisions).....	18	41	59	18	38	56
Algebra (two divisions).....	29	51	80	26	46	72

Students in the above-named classes recite daily, except that in the practice work in surveying there are two hours per week required. Many of the students, however, do much extra work in surveying. I have had the assistance of post-graduate and fourth-year students in doing this field-work.

At the beginning of the last college year, our revised course of study was adopted. We find it far more satisfactory than the old arrangement. A more extensive course in both algebra and geometry is now possible, and better results must follow.

The number of classes in mathematics has greatly increased during the past few years. There are now about a dozen for each term, not including the surveying. This would give full work for three instructors. Up to the present time the additional classes have been taught by such members of the Faculty as could find time from their own work, or by post-graduate students. The employment of a competent instructor in this department has already been authorized by the Board, and will without doubt increase the efficiency of our work.

Respectfully submitted,

COLLEGE, June 30, 1892.

D. E. LANTZ,
Professor of Mathematics.

MECHANICAL DEPARTMENT.

To the Board of Regents:

GENTLEMEN—I have the honor of submitting the following report of the Mechanical Department for the years 1890-'91 and 1891-'92.

The department has progressed along lines fully indicated in previous reports, but with increased facilities, which have made the work more effective. The very large classes in wood work are accommodated in a much smaller room than is usual in such work, and the crowded condition is felt in many ways. Heretofore, a set of tools has been used by as many as five different students each day. The new equipment of bench tools, giving 220 complete sets of tools, enables each student to have a separate kit, and makes possible an ideal in the care of tools which before has been impossible. The total enrollment in the shop was 509 in 1890-'91, and 589 in 1891-'92; there being, in 1890, 179, 182 and 130 in wood work in the three successive terms, and 6,

8 and 4 in iron work. In 1891, there were in wood work, 195, 206, and 92, and in iron work, 23, 50, and 23.

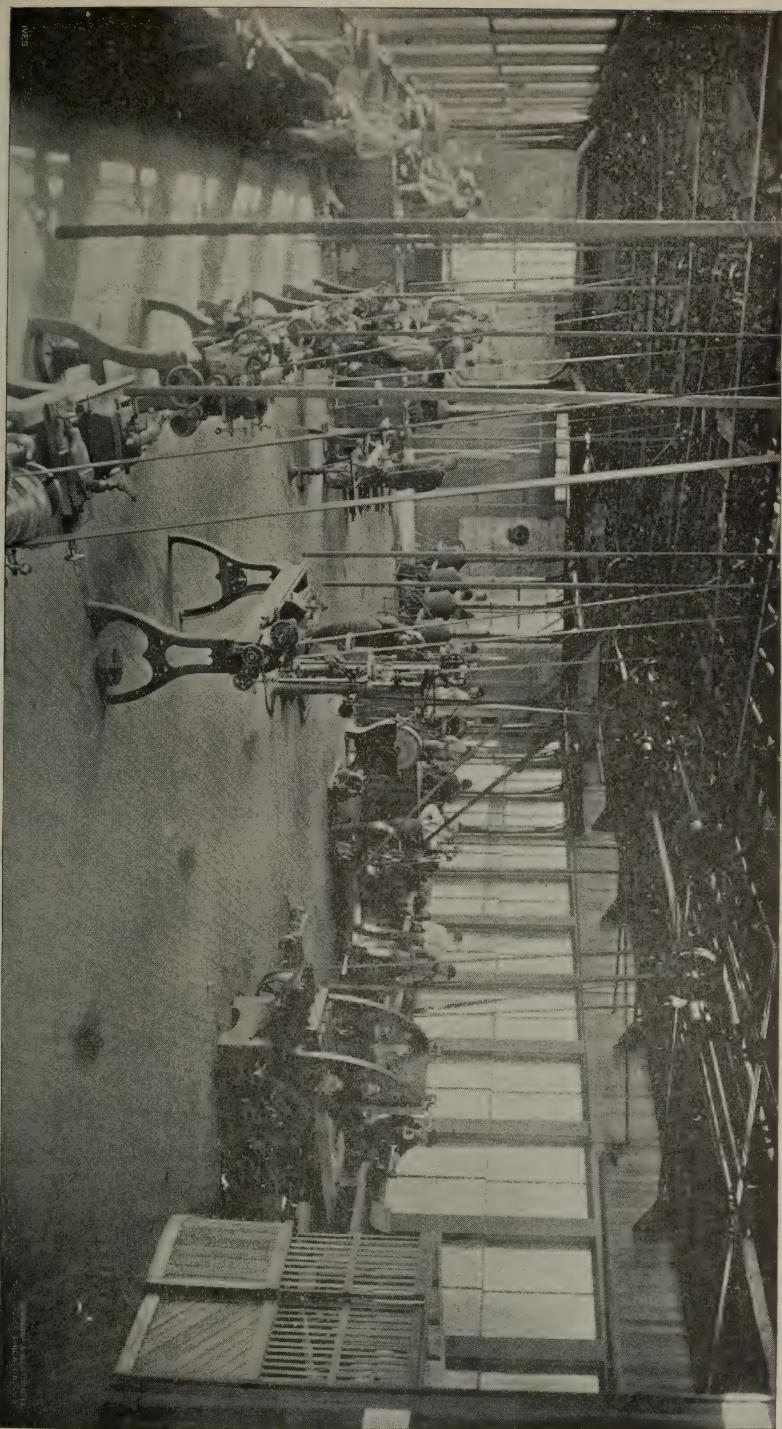
The Legislature having given a reduced appropriation of \$4,000 for a building for iron work, the department prepared plans and built a building 40 x 80 feet inside. The design of the building is in accord with modern shop construction, the framework being of iron, one story, with walls filled in largely with glass. The building was ready for use in the fall term of 1890. It has proved very satisfactory for the purpose. It still lacks, however, a means of heating similar to other parts of the College, and the presence of the 16 forges in blacksmithing in the same room as the machine shop is a disadvantage which it is hoped may be remedied.

A foundry shed was also put up, 20 x 40, with a brass foundry 12 x 40, and the other buildings of the department—pipe house and lumber shed—were removed, so as to make a more convenient and compact arrangement. Students who have been one term in wood work may select blacksmithing as their industrial, and after one term the foundry and machine-shop work may be taken in sequence.

An enrollment of about 40 can be accommodated in the blacksmith shop, the same in the foundry, and 30 in the machine shop. The course seems to be much appreciated by the mechanically-inclined students who attend this College.

The main features of the equipment are as follows: In the blacksmith shop, 16 Sturtevant forges, a 30-inch exhaust fan, 16 sets of tools, with anvils, swedge blocks, etc., with all special tools needed in a well-equipped shop. These now occupy 30 feet in length of the new building. In the iron foundry, a Collian cupola capable of melting a ton per hour, bull ladles, hand ladles, a No. 3 Sturtevant blower, large cave oven, a good assortment of flasks, and necessary small tools, with an available molding floor of 30 x 40 feet, make possible the usual run of castings, from small bench work to machinery castings of 500 pounds or more. In the brass foundry, with a good furnace, benches for 12 molders, with small tools, flasks, etc., light castings and heavy brass up to 50 pounds are possible. In the machine shop, 15 benches for hand work are provided; four 14 ft. by 6 in. lathes, one 12 ft. by 5 in., one speed lathe, emery grinder grindstone, 24-in. drill press, sensitive drill press, and 24-in. Gray planer, all run by a small upright engine. A beginning has been made towards the necessary small tools.

The need of a class-room in close connection with the workshops is still greatly felt, and could not be provided for in the plans of the building built with the reduced appropriation. A drawing room, where the increasing number of shop drawings can be made, is a necessity which has only been partially met by sacrificing the only office room available. The classes in mechanics and engineering have numbered 48 and 34 in 1891, and 64 and 34 in 1892. These classes have followed the outline previously reported. As heretofore, the general mechanical interests of the institution have been in charge of this



MACHINE SHOP.

department, increasing the labor quite considerably over the usual teaching duty of such a position.

The additional expense of the department over some previous years is accounted for by the expansion of the department, the addition of one more instructor, Mr. E. Harrold, in iron work, and the expense incident to a rearrangement of buildings, etc., of the department. The increase of shop students in 1890 was 10 per cent. over the number of 1889, and a further increase of nearly 16 per cent. was accommodated in 1891. The time of the instructors in wood work has in years before been partially used in work not chargeable to instruction, and giving a credit to the department. The increase in number of students requires their entire time now. The book-keeping of the department has assumed proportions which make it impossible for the head of the department to do the clerical labor unaided.

The expenses of the two years may be divided about as follows:

	1890-'91.	1891-'92.
Lumber, hardware, etc.....	\$450 00	\$500 00
Iron-work supplies.....	10 00	100 00
Assistance in instruction and office.....	825 00	1,325 00
Repairs on tools, benches, etc.....	75 00	75 00
Rearranging tools, hangers, belts, etc.....	5 00	50 00
Cleaning shops.....	75 00	125 00
Running engines, tools, oils, etc.....	200 00	275 00
Drawings used.....	15 00	20 00
Miscellaneous.....	20 80	134 94
Totals.....	\$1,675 80	\$2,604 95

The floor of the wood-working shop should be renewed. The heavy printing presses and stock of paper in the printing office above this room necessitated a row of posts in the room, which restrict the already small room quite considerably. The jar of the heavy press is also somewhat of a menace to the stability of the building, which was not built for machinery.

Respectfully submitted,

O. P. Hood,

COLLEGE, June 30, 1892.

Superintendent.

DEPARTMENT OF INDUSTRIAL ART AND DESIGNING.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of the Department of Industrial Art and Designing, for the fiscal period from June 30, 1890, to June 30, 1892:

The enrollment was nearly the same for both years, and the arrangement of classes has also been nearly alike. During the school year 1891-'92 I have taught classes as shown in the schedule on the following page.

TERMS.	Free-hand.		Mechanical.				Topograph- ical.....	Post-gradu- ate.....	Total.
	Pri- mary.	Ad- vanced.	First Year.	Second Year.	Third Year.	Special.			
Fall.....	34	12	169	.....	.....	16	.....	3	234
Winter.....	*184	10	42	.....	.....	23	*58	1	318
Spring.....	22	12	.....	*75	49	7	.....	.....	165
Totals.....	240	34	211	75	49	46	58	4	717

Of the classes marked with a *, those in primary free-hand met in regular session Monday, Wednesday and Friday of each week. On Tuesday and Thursday their attendance was not obligatory. The second-year class in mechanical drawing was divided into three sections, each working half a term. The class in topographical drawing consisted of third-year students, each of whom drew under my supervision a map measuring 36x48 inches, of the College farm, as surveyed by the class during the fall term. This work was done afternoons and Saturdays; all other classes met daily.

The classes in primary free-hand completed from 18 to 25 tablets of Walters' Free hand Drawing—a work designed by myself for the use of these students. A part of the time was given to drawing from simple objects. The advanced students in free-hand, mostly young women, drew from models, casts, and lithographs. As most of their finished plates were on exhibition during commencement, I will not enlarge here upon this work.

The classes in primary mechanical work completed Prang's Geometric Problems and about 10 plates of regular curve constructions. Two days of each week were given to geometric designing with drawing board, T-square, triangle, India ink, water-color, pen, and brush. The subjects studied were tile floors, architectural ornaments, and details of stone and wood construction. The second-year students studied orthographic and isometric projection, using Professor Morse's Text-books of Mechanical Drawing, Nos. 3 and 4. The third-year class studied conic projection, from Professor Morse's books Nos. 5 and 6. Two days per week were given to this work. On the other two days the class was divided, the young men studying intersections of geometric solids, and the young women, free-hand sketching from the object, including simple exercises in shading. The work of the young men of the third-year class was done partly with a view of obtaining exact results and some dexterity in the use of the scales. All problems were dictated, and the finished drafts carefully remeasured by the teacher.

The students enumerated in the column "Special" used a variety of text-books and books of reference, according to ability and intended vocation. Several drew sets of original plans for simple dwellings or school-houses, complete, with details and specifications. All of these were given a chance to learn the blue-printing process.

The four terms of post-graduate work were taken by three students, and

cover a wide range of free-hand and mathematical work, supplemented by reading. Of my work outside of the class-room, but directly in the interest of the College, permit mention of my attendance, in 1891, at the farmers' institute at Marysville, and in 1892 in Bluff City and Constant. During the two years covered by this report, I read papers before the State Horticultural Society and the State Board of Agriculture; lectured at the county teachers' institutes at Ottawa, Russell, Hays City, and Emporia; spoke before the Chautauqua assembly at Winfield; and addressed the schools and school patrons of Ogden, Randolph, and Louisville. I also served on two standing committees of the Faculty, edited a weekly column of Kansas educational news for the *Industrialist*, and, in the spring of 1891, prepared an historic sketch (of about 40 printed pages) of the College, for the student year book — the "College Symposium."

The department is greatly in need of more room, more furniture, more models, and an assistant teacher. The present large room is well located and furnished for the work of the primary classes in free-hand drawing and geometrical construction, but it is not suited for the work of the more advanced students. The second- and third-year classes need a drafting room, provided with top light and adjustable drawing stands; while the special students are equally much in want of a large room divided into alcoves, and arranged so that the light of every division can be regulated separately, and with rapidity. It is simply impossible to do advanced work in object drawing where there is no way to regulate the light effect. There should also be provided a room or large closet for the storing of the boards and tools of the special students. The character of their work requires tools that necessarily become ruined by freshmen exercises. In addition to such a room, there ought to be a cabinet with drawers large enough for the storing of drawings and studies of "medium" size. Twenty-four drawers might meet the present want. Provision should also be made, before long, for teaching the "black-printing" process to all special students. The new process is being introduced rapidly into all architects' offices and studios, because it is filling a long-felt want. A well-made blue print is a very readable reproduction of ordinary pen work, but it is totally unsuited for all curved or carved work, since it reverses light and shade. The apparatus required for this process is not costly — \$20 will probably cover all needed materials and fixtures for a whole year.

Aside from the fact that some of the classes are too large, the Industrial Art Department is in good working order. The students manifest much enthusiasm in all branches of instruction. Especially has this been the case with regard to the third-year class in the study of advanced projection. I can also report an increased interest among the more advanced students in works on art history, principles of design, and the nature and functions of art. The valuation of the inventory and the expenditure for the department during the two years will appear from the report of the Secretary of the Board of Regents.

Respectfully submitted, J. D. WALTERS,

Professor of Industrial Art and Designing.

DEPARTMENT OF ENGLISH LANGUAGE AND LITERATURE.

To the Board of Regents:

GENTLEMEN—I have the honor to present the following report of my work for the past two years in the Department of English:

During the year 1890-'91, my work was the same as in previous years; but in the fall of 1891 the requirements for entrance were increased, making it necessary to complete grammar before entering the course, the order of studies was somewhat changed, and the fourth-year class in literature was transferred to my charge. Three classes in elementary English, and all the rhetorical work of the first year, were given to the newly appointed assistant in English, Prof. J. W. Rain.

The English course now consists of one term in higher English, including the history of the origin, development and changes of the language, together with a study of its difficult constructions; one term in composition; one term in English word structure; one term in rhetoric, studying the qualities of good expression and applying the principles of rhetoric to the various forms of composition; one term in English literature, with an added term for the ladies of the fourth-year class; and a weekly drill in rhetoricals, that continues through the College course.

During the two years, I have taught four classes daily, with a fifth class once each week.

In the year, 1891-'92, the enrollment in the same classes shows considerable variation from the previous year, due to the increased requirements for entrance and the change of terms in certain studies.

The enrollment and distribution of students in classes is shown in the table below:

CLASSES.	1890.			1891.		
	Gentlemen.	Ladies.....	Totals.....	Gentlemen.	Ladies.....	Totals.....
<i>Fall Term.</i>						
English analysis, first year (four classes).....	121	68	189	120	58	178
Rhetoricals, fourth year.....	22	29	51	27	11	38
Literature, fourth year (ladies).....					11	11
<i>Winter Term.</i>						
English structure, first year (three classes).....	121	76	197			
Rhetoric, third year.....	36	14	50	47	17	64
English composition, first year (three classes).....				83	56	139
Rhetoricals, fourth year.....	22	29	51	25	11	36
<i>Spring Term.</i>						
Composition, first year (three classes).....	114	66	180			
Literature, third year.....	37	14	51	32	15	47
English structure, first year (three classes).....				120	49	169
Rhetoricals, fourth year.....	22	29	51	25	11	36

I have, throughout each year, had charge of the rhetorical work of the

fourth-year class, and, as chairman of the committee on public exercises, have assisted in the public work of the College.

Outside of my class-room, I have done the usual work on the *Industrialist* and in farmers' institutes. I have, also, as a representative of the College, lectured before teachers' associations and high schools in various parts of the State. Respectfully submitted,

O. E. OLIN,

Professor of English Language and Literature.

COLLEGE, June 30, 1892.

DEPARTMENT OF HISTORY AND CONSTITUTIONAL LAW.

To the Board of Regents:

GENTLEMEN—The following report is for the years 1890-'91 and 1891-'92:

CLASSES AND ENROLLMENT.

CLASSES.	1890-'91.				1891-'92.			
	<i>Ladies....</i>	<i>Gentlemen.</i>	<i>Totals.....</i>	<i>Divisions..</i>	<i>Ladies....</i>	<i>Gentlemen.</i>	<i>Totals.....</i>	<i>Divisions..</i>
<i>Fall Term.</i>								
General history, third-year class.....	17	36	53	2	18	37	55	2
General history, special class.....	4	1	5	1	4	1	5	1
Rhetoricals, third-year class.....	13	40	53	1	19	41	60	1
Rhetoricals, second-year class.....	59	61	110	.....	38	117	155	4
<i>Winter Term.</i>								
United States history, first-year class.....	63	100	163	3	23	30	53	2
Rhetoricals, third-year class.....	12	32	44	1	19	42	61	1
Rhetoricals, second-year class.....	52	61	113	.....	37	83	120	4
<i>Spring Term.</i>								
Constitutional law, fourth-year class.....	23	33	56	2	9	24	33	1
United States history, first year, B class.....	.....	.....	.....	.....	9	15	24	1
Rhetoricals, third-year class.....	14	36	50	.....	16	35	51	1
Rhetoricals, second-year class.....	33	60	93	.....	32	58	90	3

A new text-book, "Sheldon's Studies," has been used in the general history course for the past two years with satisfactory results. In plan and purpose it is quite different from the class books on the subject in common use. Condensed statements of facts, extracts from the writings of the times, pictures of buildings and other objects of interest, are followed by questions that require the student to form his own conclusions, to make his own generalizations. Of course, this is far more difficult than simply to read an interesting narrative and memorize the author's conclusions; but it is certain the method which calls for individual thinking will do the student more lasting good. Many of the facts may be forgotten, but the mental discipline will be a permanent possession. In addition to the text-book work, the students were required to make an outline of the chief events and prepare essays of considerable length on assigned topics.

The students of United States history, 1890-'91, used Johnston's History;

but a change was made in the following year to a text-book similar in plan to the one used in general history. The making of outlines and historical maps was also required. The number of students of United States history was less for the year just past than the one preceding, because this subject is now required on entrance, and only those who failed at that time pursued it in College.

In both the history courses the military events are subordinated to those that bear directly upon the progress of civilization—the improvements in the arts and sciences, the development in the religious, social and political life of the people. It is hoped that liberal appropriations may be made for the library, so that this department can increase the rather small stock of books bearing on these subjects.

The usual instruction was given in constitutional law, and considerable interest manifested in the discussions.

The rhetorical work of the third-year class embraced orations, essays, and extemporaneous speeches. For the last, the subjects chosen were of a very practical nature, such as might be discussed at gatherings of farmers, teachers, or business men. The second-year class prepared declamations, essays and a few orations, and were given a course of lectures designed to aid them in this work.

I have been a member of the following committees: Catalogue, public exercises, grades, and examinations. During the year 1890-'91, I was also a member of the committee on revision of the course of study, and on athletics. One lecture has been delivered before the College on "The Constitution of Kansas," and several on other subjects elsewhere. At the request of the Riley County Teachers' Association, I took charge of their reading-circle class in general history, and met with them a number of times. I have, also, read papers before a farmers' institute, the State Board of Agriculture, and the Speer-Winans Teachers' Association. Respectfully submitted,

FRANCIS H. WHITE,

Professor of History and Constitutional Law.

COLLEGE, June 30, 1892.

SEWING DEPARTMENT.

To the Board of Regents:

GENTLEMEN:—I have the honor to submit the following report of the Sewing Department for the two years ending June 30, 1892:

The numbers enrolled during these years are given in tabular form.

TERM.	1890-'91.	1891-'92.
Fall.....	104	114
Winter.....	85	80
Spring.....	80	90

During the year ending June 30, 1891, I taught five regular classes daily, with extra time given to post-graduate students. Miss Marlatt having been called to Logan, Utah, as teacher of domestic economy, Miss E. Ada Little was employed as assistant in sewing. The girls made during the year 200 dresses and nearly 800 other articles of wearing apparel or for household use.

In the year ending June 30, 1892, the classes were so large that it was thought best in the winter term to make a regular afternoon class of the fourth-year girls and post-graduates, as it was impossible to give them the time and attention they needed in the more advanced work. This class met from 1:30 to 4 o'clock P. M. on Tuesdays and Thursdays. This arrangement made the work very satisfactory.

Most of the young ladies furnished their own material, and worked for themselves, many learning to cut, fit and make their own dresses, and do all kinds of plain practical work. During the year we cut and made up over 4,000 yards of goods. The number of dresses made during the year was 235, while over 800 miscellaneous articles were completed. The following will show somewhat the line of expenditures:

<i>Debits.</i>	<i>1890-'91.</i>	<i>1891-'92.</i>
Materials.....	\$54 63	\$35 08
Repairs.....	5 50	.....
Machines.....	.....	72 90
Tables.....	.....	7 20
Totals.....	\$60 13	\$115 18
Department transfers.....	6 80	8 77
Total debits.....	\$66 93	\$123 95
<i>Credits.</i>		
By cash.....	\$7 50	.....
Increase of inventory.....	1 75	\$76 50
Current expenditures.....	57 68	47 45

Respectfully submitted, ELIDA E. WINCHIP,

Superintendent of Sewing.

COLLEGE, June 30, 1892.

PRINTING DEPARTMENT.

To the Board of Regents:

GENTLEMEN—I submit herewith a brief report of the Printing Department for the biennial period closed June 30, 1892.

The attendance during this time has averaged 80 students per term, of whom about three-fourths were young men. As in other classes, the per cent. of new students was large, many having taken printing as their "industrial" for a single term solely for the opportunity offered for drill in punctuation, with attendant exercises in proof reading. Such students gain, of course, but an inkling of the duties of a printer, and in no sense stand as representatives of the typographic art. In many cases, however, these students of a term ac-

quire great dexterity in simple composition—"straight case work," in the language of the craft—and their rapid progress, surprising even to themselves, encourages them to continue.

Students in their second and third year are given as wide a range of work as possible—composition, proof reading, correcting proof, press-work, composition and distribution of simple job forms, etc.; while the students of the fourth-year class, (or those of them who have been engaged in the office regularly outside of required "industrials,") occupy themselves almost wholly in designing and composing original forms. The jobs of work so printed are preserved for record and display, and will, I trust, form a part of the College's exhibit at the Columbian Exposition next year.

The circulation of the *Industrialist* remains about as usual, 2,200 copies weekly, with extra advertising editions of 10,000 to 20,000 twice each year. It will, by the end of another year, be in need of another dress, which I trust the Board will authorize me to purchase. A few fonts of type, an assortment of brass rule and slugs, with cases, and a job imposing stone, are yet needed to complete our equipment, and these, too, I ask the Board to provide.

Much of the old type, which was worthless except for recasting, was sold this month to the type founders for that purpose, and new type taken in payment therefor. The department gains several much-needed fonts of type in this manner, but at the expense of a considerable shrinkage in the inventory.

As the department grows, more room is needed. The crowded condition of the office is remarked by all who visit it, while those who use it find themselves bumping against obstacles at every turn. The removal of the partition between the office and the hall seems desirable, and would give 175 feet of additional floor space, as well as admit more light. While the removal of this partition will afford temporary relief, it seems proper to suggest to the Board the unfitness of the present quarters for a printing office. As has been stated, the room is small. Partly because of this, and in part for the reason that the load, with the added weight of presses, is too heavy, our paper stock, ranging in weight from 4,000 to 6,000 pounds, is kept for the most part in the entrance hall below stairs; also the vibration occasioned by the running of our heavy cylinder press is a constant strain upon the walls and joists, which is not without its ill effect. In the shifting and re-arrangement which naturally come with the growth of the institution, I ask that the needs of the department in this direction be given due consideration.

FINANCIAL STATEMENT, 1890-'91.

Expenditures.		Receipts.	
Appropriations.....	\$250 00	Cash.....	\$243 60
Current expenses.....	1,301 93	Department bills.....	282 80
Department bills.....	48 19	Inventory increase.....	131 62
		Balance—expense.....	942 10
Total.....	\$1,600 12	Total.....	\$1,600 12

FINANCIAL STATEMENT, 1891-'92.

Expenditures.		Receipts.	
Current expenses.....	\$1,252 88	Cash.....	\$248 43
Department bills.....	14 39	Department bills.....	247 27
		Inventory increase.....	246 52
		Balance — expense.....	525 05
Total.....	\$1,267 27	Total.....	\$1,267 27

The inventory of the department of even date shows furniture and fixtures, machinery and material, and paper stock, to the value of \$4,254.78.

The expenses for the two years are apportioned thus:

ITEMS.	1890-'91.	1891-'92.
Paper.....	\$399 05	\$559 92
Type and other materials.....	15 57	50 59
Ink.....	19 10	21 13
Student labor.....	480 31	521 07
Postage.....	45 32	31 63
Freight.....	16 58	56 15
Incidentals.....	12 92	3 90

Respectfully submitted,

COLLEGE, June 30, 1892.

J. S. C. THOMPSON,

Superintendent of Printing.

DEPARTMENT OF MUSIC.

To the Board of Regents:

GENTLEMEN—I respectfully submit the following report of the Department of Music, vocal and instrumental, for the years 1890-'91 and 1891-'92:

CLASSES.	Ladies.	Gentlemen.	Total.
<i>Fall Term, 1890.</i>			
Instrumental-music class.....	28	16	44
Singing class "B".....	48	72	120
Singing class "A".....	17	12	29
Voice culture.....	2	1	3
Glee club.....		4	4
College orchestra.....	3	9	12
Writing class.....	14	32	46
Totals.....	112	146	258
<i>Winter Term, 1891.</i>			
Instrumental-music class.....	23	16	39
Singing class "B".....	15	42	57
Singing class "A".....	12	10	22
Voice culture.....	2		2
College orchestra.....	3	12	15
College cadet band.....		12	12
Totals.....	55	92	203

CLASSES.	Ladies.	Gentlemen.	Total.
<i>Spring Term, 1891.</i>			
Instrumental-music class.....	23	13	36
Singing class "B".....	13	13	26
Singing class "A".....	7	9	16
Voice culture.....	2	2	4
Glee club.....			8
College orchestra.....	4	14	18
College cadet band.....		14	14
Writing class.....	15	23	38
Totals.....	64	88	160
<i>Fall Term, 1891.</i>			
Instrumental-music class.....	23	26	49
Singing class "B".....	22	77	99
Singing class "A".....	12	24	36
Voice culture.....	3	2	5
Glee club.....		4	4
College orchestra.....	3	16	19
College cadet band.....		20	20
Totals.....	63	169	232
<i>Winter Term, 1892.</i>			
Instrumental-music class.....	15	28	43
Singing class "B".....	6	27	33
Singing class "A".....	12	30	42
Voice culture.....	2	1	3
Glee club.....		4	4
College orchestra.....	4	12	16
College cadet band.....			14
Totals.....	39	102	155
<i>Spring Term, 1892.</i>			
Instrumental-music class.....	18	20	38
Singing class "B".....	3	16	19
Singing class "A".....	14	17	31
Voice culture.....	2	5	7
Glee club.....	4	4	8
College orchestra.....	6	15	21
College cadet band.....			15
Totals.....	43	73	139

Since my last report the following instruments and furniture have been secured, by your thoughtfulness and appreciation of our needs, and added to our equipment: One Chickering concert-grand piano, one double bass-viol and bow, three piano covers, four piano stools, and four piano dusters. Also a set of "Brown's Prismatic Charts of Gesture, Elocution, and Music," being duplicates of an original set prepared for the Kansas Conservatory of Music by Rev. Robert Brown and brother, under whose supervision this set was especially prepared for the Musical Department of the College, and painted by Mr. Wm. McNutt. The set consists of nine mammoth wall charts—oil paintings, 12 feet 4 inches square—mounted on rollers, and at present hung in the north corridor, the room assigned for the use of the singing classes.

The work in the department has been similar in kind to that of preceding years, increased in amount, however, by the larger enrollment of pupils. The efficient help furnished by Misses E. Ada Little and Pearl Dow has enabled the department to meet the wants of all.

The opening exercise at chapel in the morning, being led by an orchestra, requires my presence to direct the same. Assignments for lessons in instru-

mental music and voice culture are made for any hour which does not conflict with other college duties, thus requiring me to be in my rooms most of the day.

As a member of the committee on public exercises and College socials, considerable time has been given to the preparation of the musical part of the several programmes. The department has furnished all the music for the fall, winter and spring term socials, assisted the College societies in the preparation of their music for annual exhibitions, and the fourth-year classes in the preparation of their original music for class-day exercises, and furnished all the music—vocal, piano, orchestral, and band—during commencement day and week; also, for the inspection ceremonies and public military parade of the College cadets, by the College cadet band.

The singing classes "A" and "B," glee club and orchestra meet regularly, as per announcement in the catalogue, and the College cadet band usually meets on Friday afternoons. In addition to the regular work of instruction in the Musical Department, I met a class in writing during the fall and spring terms of 1890-'91. I have contributed to the *Industrialist*, met appointments in the Friday afternoon lecture course, and responded to all calls for music on occasions of public and general interest.

Respectfully submitted,

A. B. BROWN,

Professor of Music.

COLLEGE, June 30, 1892.

MILITARY DEPARTMENT.

To the Board of Regents:

GENTLEMEN—My biennial report on the operations of the Military Department for the sessions 1890-'91, and 1891-'92 of the Kansas State Agricultural College is respectfully submitted, as follows:

Theoretical instruction has occupied an average of about one hour per week each term, and consisted of lectures on military science and the art of war, delivered to the male members of the second-year class; also, of recitations in infantry tactics, by cadets who voluntarily chose to attend at fixed hours for the purpose. Practical instruction has occupied an average of about two hours each week, and consisted in infantry and light artillery drills, military ceremonies, small-arms target practice, and, during the fall of 1890, some military signaling with flag. The average number enrolled for drills in the fall term of each year was 156, including both new and advanced cadets.

The average number enrolled during the winter term was, 65 in military science, 106 for drills—both new and advanced cadets. The number enrolled during the spring term was, 52 in military science, 112 for drills—both new and advanced cadets.

Recitations in tactics were an extra, voluntary work, and held, generally,

after the regular academic hours of the day. For these causes the attendance was irregular, though the progress made was encouraging.

On October 3, 1891, the Secretary of War adopted a new system of "drill regulations" for infantry, and at the beginning of the winter term of this year we discarded the old Upton's system and adopted the new. The drill regulations require all formations to be in the double rank. This necessitates a greater number of men for the minimum number necessary to organize a company than was the case in Upton's Tactics, where single-rank formation was permissible. To execute the company movements with any degree of precision, and, therefore, give the proper instruction, there should be at least four sets of fours. This requires 42 men to the company, including officers, guides, etc. The battalion maneuvers are prescribed for a four-company battalion. To organize a model battalion, then—such as the cadets will find in the State-troop organizations, after graduating—there should be, at the very least number, 174 advanced cadets enrolled; otherwise, thorough instruction in the battalion maneuvers cannot be successfully accomplished.

This department has not had that number of advanced cadets enrolled on its list at any time during the past two years, nor do the prospects seem very encouraging that it will have in the near future under the present system. I do, therefore, earnestly recommend, in the best interest of the department, that some means be devised, if possible, by which the number of advanced cadets enrolled may be increased to at least 174, and maintained at that standard during the fall and spring terms of each year. All of the State troops will soon adopt the four-company battalion organization. For this reason, it is extremely desirable that we too should recruit our College battalion, if possible, up to four companies, each having at least a sufficient strength to illustrate practically the movements prescribed in the drill regulations, especially in view of the immense good it easily lies in the power of this institution to do for the national guard of this State, and through it for the military interest of the United States, by means of the invaluable quota of well-trained officers it could furnish each year who are skilled in the practice of drill, and versed in a knowledge of the military laws of the State. It is not expedient to put new cadets in ranks to drill side by side with the advanced cadets—particularly is it inadvisable under a system of only two drills a week during a three-months term. For this reason, the new cadets have been drilled separately the first term of their enlistment; after which, if they reënter, they are assigned to companies as advanced cadets.

In January, 1891, the War Department authorized the expenditure of 50 rounds of ammunition by each cadet at target practice. This substantial increase enabled our cadets to improve their records very perceptibly over that of last year, when they fired an average of about nine rounds each.

This department purchased, during the session of 1890-'91, 7 new blouses, 12 new forage caps, 15 new waist belts and plates, 6 new trumpets, with cords and tassels, and a beautiful silk-embroidered national color, having

the inscription "Kansas Agricultural College" embroidered in silk; also, a supply of uniform blouse buttons and cap ornaments.

During the session of 1891-'92, the ordnance department of the army exchanged 100 waist belts and plates for the same number of unserviceable belts and belt plates of obsolete pattern; and supplied us with six additional new non-commissioned officers' swords and scabbards.

A supply of spare parts for the rifles were purchased to replace broken parts. The expenditures in 1890-'91 were, \$206.45; 1891-'92, \$192.65.

I was called away, in obedience to orders from the War Department, for a period of 12 days, in April, 1891.

In addition to my military duties, by special arrangement between the President and myself, during the session of 1890-'91, I taught three classes in arithmetic and algebra each term; and in that of 1891-'92 I taught four classes in algebra during the fall term, one class in algebra during the latter half of the winter term, and two classes in algebra and arithmetic during the spring term.

EDWIN B. BOLTON,

*Captain 23d Infantry, United States Army,
Professor of Military Science and Tactics.*

COLLEGE, June 30, 1892.

REPORT OF THE LIBRARIAN.

To the Board of Regents:

GENTLEMEN—I here present the report of the library for the two college years ending June 30, 1892.

The library has been under my supervision since September 1, 1886, when I took charge of it as chairman of the Faculty committee on library. Two years later I was made Librarian, by action of the Board of Regents. During these six years, I have devoted only such time as could be spared from my duties as Professor of Mathematics to general oversight of the work of this department. It is needless to say that Saturdays and whole vacations have been spent mostly in the library. The occasional changes made in Assistant Librarian have greatly increased my responsibility, and have made the duties, which, in the main, are of a pleasant nature, much more trying than they otherwise would have been. During the past three years, Miss Jane C. Tunnell has filled the position of assistant in a very efficient and satisfactory manner, but she has announced her resignation, to take effect at the end of next August. This will require the employment of another person, probably without experience in library work; and the Librarian will once more, of necessity, be compelled to assume the part of an instructor in cataloguing and routine work.

When it is remembered that the chair of mathematics presents in itself an abundant field of labor, the inquiry may be made whether the interests of the College would not be better served by the permanent employment of a com-

petent librarian, than by the detail of a member of the Faculty to do this extra duty. The growth of the library and the extension of its use have been such as to now require the constant attendance and help of some person. This expansion, too, has outgrown our system of classification, and changes in this are needed to meet the requirements of the day. A revision of the classification should not be attempted by any but an experienced librarian—one who has a broad knowledge not only of the various departments of learning, but also of the special needs of our own institution.

During the past six years the library has more than doubled, both in the number of its books and in its general usefulness to the students. The home use of the books has increased steadily, and their use in the library itself has certainly been quadrupled.

During the past two years, the additions have been as follows:

	1890-'91.	1891-'92.
Number bound volumes bought.....	887	71
“ volumes of magazines bought and bound.....	339	152
“ bound volumes donated.....	217	169
“ volumes donated and bound.....	124	196
“ “ public documents deposited.....	95	98
“ “ obtained by exchange.....	3	.....
“ pamphlets donated.....	247	307
Totals.....	1,912	896

It will be seen that the growth of the library during the latter year was much less than that made during 1890-'91. This is owing to the small amount appropriated to our use by the last Legislature. The sum of \$250 per year, which was given, is hardly enough to buy the magazines and periodicals absolutely necessary for our reading-room. We have been compelled for want of means, to forego the purchase of many technical periodicals almost indispensable to a scientific institution. Technical journals are, like technical books, very expensive; and we ought to have \$500 per year for this item of periodicals alone.

Including the additions mentioned above, the total inventory of June 30, 1892, shows the following results:

11,837 bound volumes, valued at.....	\$19,882 30
389 “ “ duplicates, valued at.....	100 00
3,500 unbound pamphlets, valued at.....	88 00
303 volumes in the Experiment Station *.....	.....
16,029 volumes, valued at.....	\$20,070 30

* These volumes are included in the inventory of the Experiment Station, and their value is omitted here.

Catalogues, book cases, furniture, and other property of the library, increase the total inventory to \$22,865.65.

A reasonable annual State appropriation for the purchase of books ought to enable us to add, including donations, at least 2,000 volumes per annum to our accession list. In 10 years this would increase the total of our lib-

rary to 36,000 volumes, a number still less than is found in some of our best agricultural colleges. The high reputation which our institution has acquired both at home and abroad makes it necessary that we maintain a progressive policy in regard to its library. A steady supply of new books, giving the results of the world's progress in every branch of science and its applications to industry, is necessary. The library of a college, when properly managed and made useful to the students, has more influence in the development of thought and character than have the Faculty. To maintain the policy here outlined for the future of the library would require the annual expenditure of \$2,500, in addition to the item of \$500 for periodicals.

There has been a growing demand both among Faculty and students for reference to the decisions of the Supreme Court of our State. I therefore recommend that the Board take the necessary measures to secure a set of the Kansas Reports for the use of our library.

The additional shelving provided for us during the summer of 1891, by making changes in the old reading-room, has all been occupied by books, and the old question of providing space for our donations and for our bound periodicals is again a source of trouble. The coming year will require us to find room for about 1,000 more volumes. Many of the alcoves are already filled to overflowing, and constant breaks in classification are necessary, while sets of books have to be separated, with considerable distances between their parts. All that was said on this subject in my former report comes with greater emphasis at this time. We must have more commodious quarters for our library. We have now about 6,000 volumes practically out of the reach of our students, because of the distance from the floor to the shelves which contain the books. We have no reading-room worthy of the name. The entire library would not afford standing room for half the students that ought to consult it.

Two years ago the Board asked the Legislature for an appropriation of \$8,000 for the beginning of a library building. The sum would have been entirely inadequate to put up a building such as we need. If built in the plainest possible style, yet made fire-proof, a building to serve our wants, even for the short period of 20 years, would cost at least \$15,000. If permanence of utility and growth are considered, and the building is made pleasing in exterior finish, so as to conform to the surroundings, I am confident that the expenditure of \$25,000 would be the best economy. It is possible that the demand for more room in other departments of the College, as well as in this, could best be met by the erection of a larger building, in which the library should occupy one wing and the museum and class-rooms the others. The general prosperity of our State during the past two years makes the present an auspicious time to ask for enlarged appropriations for books and for a new building. Our State can well afford a most liberal policy toward her institutions of learning.

The financial statement follows. Schedule A, appended to this report, is

- From Prof. S. A. FORBES, Champaign, Ill.: Illinois Agricultural Report for 1888; Bulletins of Illinois State Laboratory of Natural History, vols. 1, 2, and 3, in numbers; Bulletins 1 to 18, Illinois Agricultural Experiment Station, one volume, bound.
- From Prof. JOSEPH H. GILBERT, Rothamsted: Occasional Lectures in Agricultural Chemistry.
- From Prof. C. C. GEORGESON, Manhattan, Kas.: American Shropshire Record, vol. 5.
- From the author, WM. ELLIOT GRIFFIS, Cambridge, Mass.: Japanese Fairy World, 1 vol.
- From PETER HENDERSON & Co.: Hand-book of Plants and General Horticulture.
- From D. C. HEATH & Co., publishers: Le Metromaine, Alexis Piron.
- From Hon. JOHN E. HESSIN, Manhattan, Kas.: Walker's Introduction to American Law.
- From the author, O. C. HILL: Fifth Reader, or Self-Instructor.
- From Prof. W. A. KELLERMAN, Columbus, Ohio: Agricultural works, bound, 26 vols.; geological works, bound, 12 vols.; educational works, bound, 5 vols.; zoölogical and botanical works, bound, 12 vols.; unbound scientific journals, 52 complete vols.; unbound journals and pamphlets, 200 numbers.
- From LEACH, SEWALL & SANBORN, publishers: Wells's College Algebra.
- From Sec. I. D. GRAHAM, Manhattan, Kas.: Numerous pamphlets and reports.
- From GEORGE LANDAU, Esq., New York city: Travels of Baron Wilhelm von Landau, 2 vols., unbound.
- From MORTIMER LEVERING, Secretary: American Shropshire Sheep Record, vols. 1, 2, 3, and 6.
- From THOMAS MCFARLANE, Secretary: American Aberdeen-Angus Herd Book, vol. 4.
- From Hon. ADOLPH LEVE, Cincinnati, Ohio: Ohio Forestry Report, vol. 4.
- From Prof. E. A. POPENOE, Manhattan, Kas.: Missouri Horticultural Report, vol. 32.
- From JAMES RITCHIE, Esq., Haverhill, Kas.: The Cannoneer, Augustus Buell.
- From Prof. E. M. SHELTON, Brisbane, Queensland: Report of Queensland Department of Agriculture, 1889-'90; Synopsis of Queensland Flora, first, second and third supplements, vol. 3, Bailey; Plants Poisonous or Injurious to Stock, Bailey; Catalogue of the Plants of Queensland, Bailey; Proceedings of the Melbourne Conference of Irrigationists; Select Extra Tropical Plants, Von Mueller; Handbook of Destructive Insects, C. French.
- From Miss JANE C. TUNNELL, Assistant Librarian, Manhattan, Kas.: Five volumes School Readers.
- From GEORGE F. THOMPSON, Manhattan, Kas.: Belford's Magazine, vols. 2, 3, 4, and 5, in numbers.
- From Dr. N. S. MAYO, Manhattan, Kas.: Diseases of Horses, Report on.
- From Mrs. MARY A. MILLER, State Librarian, Des Moines, Iowa: Iowa Agricultural and Horticultural Reports, 24 vols.; Catalogue of Iowa State Library.
- From NEBRASKA STATE LIBRARY, Lincoln, Neb.: Nebraska Agricultural and Horticultural Reports, 11 vols, bound; Nebraska Reports and Pamphlets, paper, 58 vols.
- From PENNSYLVANIA STATE LIBRARY, Harrisburg, Pa.: Geological Reports, 22 vols.; Labor and other Reports, 28 vols.; Birds of Pennsylvania, Warren.
- From Hon. H. G. WADLIN, Commissioner, Boston, Mass.: Massachusetts Industrial Reports, 10 bound vols., 12 pamphlets.
- From MISSOURI STATE BOARD OF AGRICULTURE: Reports on Agriculture and Horticulture, 7 vols.
- From the BRITISH GOVERNMENT, through the UNITED STATES DEPARTMENT OF AGRICULTURE: Rothamsted Memoirs and Experiments, Laws and Gilbert, 10 vols., full morocco.
- From Hon. CHAS. ROBINSON, Lawrence, Kas.: The Kansas Conflict.
- From BARON F. VON MUELLER, Australia: Select Extra Tropical Plants, half morocco.
- From E. W. STEPHENS, Secretary, Columbus, Mo.: American Hereford Record, vols. 1-12.
- From W. H. RAGAN, Secretary: Transactions Indiana Horticultural Society, 1890.
- From the SECRETARY OF THE INTERIOR, to Depository of Documents: Eight shipments, 192 vols., leather binding.
- From J. G. AMES, Superintendent of Documents, Washington, D. C.: 23 volumes Public Documents.
- From the SMITHSONIAN INSTITUTION, Washington, D. C.: Proceedings of United States National Museum, vols. 12 and 13; Smithsonian Report, 1890; Bulletins of United States National Museum, as published; Experiments in Aero-dynamics, Langley; Smithsonian miscellaneous collections of pamphlets; Bulletins of the United States Board of Geographic Names.
- From the UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D. C.: Annual Reports of the Secretary of Agriculture, 1890, 1891; Annual Reports of Bureau of Animal Industry, 1889, 1890; Bulletins of the various divisions, as issued; Insect life, as issued; Journal of Mycology, as issued; Monthly Weather Review, as published; Experiment Station Record, as published; Irrigation Reports, Hinton and Nettleton.
- From the UNITED STATES DEPARTMENT OF STATE, Washington, D. C.: Minutes of the International American Conference, 3 vols; Consular Reports, as published; Special Consular Reports, as published; Foreign Relations of the United States, 1887-'88, 1888-'89.
- From the SECRETARY OF THE NAVY, Washington, D. C.: The Ephemeris and Nautical Almanac, 1890-'91; Report of the Commissioner of Navigation, 1890.
- From the SECRETARY OF WAR, Washington, D. C.: Opinions of the Judge-Advocate General; Official Army Register, 1890-'91; Report of the Inspector General, 1890-'91; Report of the Chief of Ordnance, 1890-'91; Report of the Chief Signal Officer, 1889.

From the SECRETARY OF THE TREASURY, Washington, D. C.: Report of the Comptroller of the Currency, 1890-'91; Finance Report, 1890.

From the DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY, Washington, D. C.: Mineral Resources of the United States, 1887-'88.

From SECRETARIES OF BOARDS OF HEALTH: Michigan Report, 1889, and Bulletins; Rhode Island Report, 1889, and Bulletins; Wisconsin Report, vols. 1 and 2; Kansas Report, 1890-'91; Tennessee Bulletins; New Haven Bulletins; Connecticut Report, 1889.

From the UNITED STATES COMMISSIONER OF LABOR, Washington, D. C.: Fifth Annual Report.

From the UNITED STATES COMMISSIONER OF EDUCATION, Washington, D. C.: Annual Reports, 1888, 1889, 2 vols.; Circulars of Information, as published.

From KANSAS OFFICERS: Board of Agriculture Monthly and Quarterly Reports; Bureau of Labor Report, 1890; Railroad Commissioners' Ninth Report; State Treasurer, Report, 1890; Kansas Historical Collections, vol. 4; Superintendent of Public Instruction, Seventh Biennial Report; State Charitable Institutions, Seventh Biennial Report.

From the UNITED STATES COMMISSIONER OF PATENTS: Annual Reports; Gazette of the Patent Office, as published.

From the AMERICAN MUSEUM OF NATURAL HISTORY, New York city: Bulletins, as published; Annual Reports.

From the MISSOURI BOTANICAL GARDENS, St. Louis, Mo.: Annual Reports, 1891, 1892, bound.

From the AMERICAN ORIENTAL SOCIETY: Journals of the Society, vols. 2, 3, 4, and 5.

From the SECRETARY OF THE HOLSTEIN-FRIESIAN ASSOCIATION: Dutch Friesian Herd Book, vols. 3 and 4; Holstein Herd Book, vols. 1 to 9; Holstein-Friesian Herd Book, 11 vols.

From the VARIOUS HATCH EXPERIMENT STATIONS: All Bulletins and Reports, as published.

SCHEDULE B.

The periodicals on the following list have been on file in the library and reading room during the biennial period embraced in this report:

I.—PURCHASED.

Agricultural Science.	Good Housekeeping.
American Architect (international edition).	Harper's Monthly.
American Art Printer.	Harper's Bazaar.
American Chemical Journal.	Harper's Weekly.
American Gardening.	Housekeeper.
American Journal of Mathematics.	Inland Architect (photo. edition).
American Journal of Philology.	Inland Printer.
American Journal of Science.	Journal of the Chemical Society, London.
American Meteorological Journal.	Journal of Comparative Medicine.
American Naturalist.	Journal of the Military Service Institution.
American Veterinary Review.	Library Journal.
Atlantic Monthly.	Literary World, Boston.
Auk.	London Live Stock Journal.
Botanical Gazette.	London and Edinburgh Philosophical Magazine.
Butterick's Delineator.	Magazine of American History.
Canadian Entomologist.	Nation.
Carpentry and Building.	Nature.
Century Magazine.	North American Review.
Chemical News, London.	Paper and Press.
Country Gentleman.	Popular Science Monthly.
Critic.	Psyche.
Eclectic Magazine.	Railroad and Engineering Journal.
Edinburgh Review.	Rural New Yorker.
Education.	Science.
Electrical Review, New York.	Scientific American.
Engineering Magazine.	Scientific American Supplement.
Forum.	Scribner's Magazine.
Garden.	Season, The.
Garden and Forest.	Studies from the Biological Laboratory.
Gardener's Chronicle.	Table Talk.

II.—DONATIONS.

Advance, Chicago.
 American Sentinel, New York.
 Breeders' Gazette, Chicago.
 Colorado Farmer, Denver.
 Daily Capital, Topeka (President Fairchild).
 Daily Gazette, Kansas City, Kas.
 Fancier and Farm Herald, Denver.
 Gazette of the U. S. Patent Office.
 Handicraft, Honolulu, H. I.
 Industrialist, Manhattan.
 Industrial American, Lexington, Ky.
 Jersey Bulletin, Indianapolis, Ind.

Junction City Union.
 Kansas Agriculturist, Wamego, Kas.
 Kansas Farmer, Topeka.
 Literary News, New York.
 Live-Stock Indicator, Kansas City, Mo.
 McPherson Democrat.
 Naturalist's Leisure Hour, Philadelphia.
 Oberlin Review, Oberlin, Ohio.
 Presbyterian, Chicago.
 Union Signal, Chicago.
 Western Agriculturist, Quincy, Ill.

III.—INDUSTRIALIST AND EXPERIMENT STATION EXCHANGES.

From Kansas.

Allen County—Humboldt Union, Moran Herald, Iola Courant.
Anderson County—Westphalia Times, Greeley Graphic, Republican Plaindealer (Garnett), Free Press (Colony).
Atchison County—Atchison Champion, New Kansas Magazine, Muscotah Record.
Barber County—Barber County Index, Kiowa Herald, Hazelton Express, Kiowa Journal.
Barton County—Great Bend Register.
Brown County—Fairview Enterprise.
Butler County—Augusta Journal, Douglass Tribune, El Dorado Republican, White Water Tribune.
Chase County—Chase County Courant.
Chautauqua County—Sedan Times-Journal.
Cherokee County—Baxter Springs News.
Clark County—Ashland Weekly Journal.
Clay County—Clay Centre Times, Clay Centre Dispatch.
Cloud County—Clyde Argus, Clyde Herald, Concordia Empire, The Alliant (Concordia), Glasco Sun.
Coffey County—Burlington Republican, LeRoy Reporter, Burlington Nonpareil.
Cowley County—Weekly Republican Traveler, Winfield Courier.
Comanche County—Coldwater Enterprise.
Crawford County—Western Herald, Girard Press.
Decatur County—Oberlin Herald, Norcatur Register.
Dickinson County—Abilene Weekly Chronicle, Solomon Sentinel, Integral Coöperator, Enterprise.
Douglas County—Baker Beacon, Baker University Index, Lawrence Journal, University Courier, University Review, Seminary Notes.
Edwards County—Kinsley Graphic.
Elk County—Howard Courant, Howard Democrat, Longton Times.
Ellis County—Hays City Sentinel, The Republican (Hays City).
Ellsworth County—Ellsworth Democrat, Wilson Echo.
Finney County—Garden City Imprint.
Ford County—Speareville Blade.
Franklin County—Lane Leader, Ottawa Journal and Triumph, Ottawa Republican.
Garfield County—Garfield County Call, Ravanna Chieftain.
Geary County—Junction City Republican, Junction City Tribune, Junction City Union.
Gove County—Grainfield Cap Sheaf, Quinter Republican.
Grant County—Ulysses Tribune.
Gray County—New West Echo (Cimarron).
Greeley County—Western Homestead (Tribune).
Greenwood County—Fall River Times, Madison News.
Harper County—Anthony Republican, Harper Sentinel.
Harvey County—Burrton Graphic, Newton Weekly Journal, Church Herald (Newton).
Jackson County—Holton Weekly Recorder, Holton Weekly Signal, The Clipper (Soldier).
Jefferson County—Valley Falls New Era, Farmers' Vindicator.
Jewell County—Jewell County Republican, Western Advocate.
Johnson County—Kansas Patron, Kansas Star, Spring Hill New Era.
Kearny County—Lakin Index.
Kingman County—Cunningham Herald.
Labette County—Chetopa Advance, Mound Valley Herald, Oswego Independent, Wilsonton Journal.
Leavenworth County—Leavenworth Daily Standard, Orphans' Friend, Home Record.
Lincoln County—Lincoln Beacon, Sylvan Grove Sentinel.

- Linn County*—Pleasanton Herald, Mound City Progress.
- Lyon County*—Allen Tidings, College Life, Emporia Gazette, Normal Quarterly, Hartford News, Hartford Call.
- McPherson County*—McPherson Democrat, McPherson Republican, McPherson Anzeiger, Educator and Companion, Lindsborg News, Marquette Tribune.
- Marion County*—Peabody Gazette, Rural Kansan, School Gleaner.
- Marshall County*—Axtell Anchor, Blue Rapids Times, Weekly Motor, Marshall County News, Marshall County Democrat, Frankfort Sentinel, People's Advocate (Marysville).
- Meade County*—Meade Republican.
- Mitchell County*—Public Record, Cawker City; Tri-County News, Scottsville.
- Montgomery County*—Cherry Vale Republican, South Kansas Tribune.
- Morris County*—Council Grove Republican.
- Morton County*—Morton County Star, Richfield.
- Neosho County*—The Hornet (Thayer).
- Ness County*—Ness County News.
- Norton County*—Norton Champion, Norton Courier, Edmond Times, The Liberator (Norton).
- Osage County*—Carbondalian, Kansas People (Osage City), Melvern Review, Osage County Graphic, Lyndon Journal, National Echo (Burlingame).
- Osborne County*—Downs Times, Osborne County Farmer, Osborne County News.
- Ottawa County*—Delphos Republican, Minneapolis Messenger.
- Phillips County*—Logan Republican, Phillips County Inter-Ocean.
- Pottawatomie County*—Westmoreland Indicator, Westmoreland Recorder, Kansas Agriculturist (Wamego).
- Rawlins County*—Republican Citizen (Atwood).
- Reno County*—Hutchinson Weekly News, Nickerson Argosy.
- Republic County*—Belleville Democrat, Courtland Register.
- Rice County*—Bulletin and Gazette, Sterling; Chase Record, Lyons Democrat.
- Riley County*—The Republic, The Nationalist, The Mercury, Kansas Telephone (Manhattan); Leonardville Monitor, Riley Regent, Manhattan Homestead, Randolph Enterprise.
- Rooks County*—Western News, Rooks County Record (Stockton).
- Rush County*—La Crosse Clarion.
- Russell County*—Russell Journal, Russell Record, Lucas Advance.
- Saline County*—Saline County Journal, Salina Sun, Weekly Tidings (Salina), Kansas Wesleyan Advocate, Gypsum Advocate.
- Sedgwick County*—Colwich Courier, Wichita Eagle.
- Seward County*—Liberal Leader, Arkalon News.
- Shawnee County*—Weekly Capital, Kansas Farmer, Kansas Newspaper Union, Western School Journal, Western Poultry Breeder, Western Baptist, Topeka Mail, Washburn Argo, Rossville Times, Kansas Telegraph, Western Odd Fellow.
- Sheridan County*—Selden Times.
- Sherman County*—Goodland News, Goodland Republican.
- Smith County*—Gaylord Herald.
- Sumner County*—Caldwell Journal, Mulvane Record, Mocking Bird, Oxford.
- Wabaunsee County*—Alma News, Alma Signal, Eskridge Star.
- Wallace County*—Sharon Springs Leader.
- Washington County*—Barnes Enterprise, Hanover Democrat, Washington Register, Washington Republican, Greenleaf Journal.
- Wichita County*—Leoti Standard.
- Wilson County*—Fredonia Democrat, Wilson County Citizen.
- Wyandotte County*—Chronicle (Kansas City), Kansas Catholic.

From other States.

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| Acher und Gartenbau Zeitung, Milwaukee, Wis. | Bulletin, The, Agricultural Dept., Raleigh, N. . |
| Agricultural Epitomist, Indianapolis, Ind. | Canadian Live-Stock Journal, Toronto. |
| American Agriculturist, New York. | Cadet, The, Orono, Me. |
| American Breeder. | Chaddock, The, Quincy, Ill. |
| American Farm and Horticulturist, Richmond, Va. | Civil Service Record, Boston. |
| American Farmer, Baltimore. | Colman's Rural World, St. Louis. |
| American School, Streator, Ill. | Coal Creek Enterprise, Coal Creek, Colo. |
| American Sheep Breeder, Chicago. | Dairy Column, Chicago. |
| Baltimore Weekly Sun. | Dairy World, Chicago. |
| Border's Odd Fellow, Kansas City. | Delaware Farm and Home. |
| Board of Education, The, Chicago. | Educational Notes, New York. |
| Breeders' Gazette, Chicago. | Equity, Chicago. |

- Farm and Fireside, Philadelphia.
 Farm and Home, Springfield, Ohio.
 Farm, Field, and Stockman, Chicago.
 Farm Journal, Philadelphia.
 Farmers' Home Weekly, Dayton, Ohio.
 Farmers' Review, Chicago.
 Farm, Stock, and Home, Minneapolis, Minn.
 Fruit and Grape Grower, Charlottesville, Va.
 Grange Visitor, Lansing, Mich.
 Hesperian, Lincoln, Neb.
 Hospodar, Omaha.
 Hoard's Dairyman, Atkinson, Wis.
 Hoisington Bank Reporter, Kansas City.
 Holstein-Friesian Register, Brattleboro.
 Home Magazine, Washington, D. C.
 Husbandman, Elmira, N. Y.
 Inter-Mountain Educator, Salt Lake City.
 Kansas City Commercial.
 Kansas City Implement and Farm Journal.
 Kansas City Live-Stock Indicator.
 Kentucky University Tablet.
 Ladies' Home Companion.
 Longmont Times, Longmont, Colo.
 Live-Stock Report, Chicago.
 Mail and Express, New York.
 Maritime Agriculturist, Dorchester, N. B.
 Mirror and Farmer, Manchester, N. H.
 Monthly Bulletin, Providence, R. I.
 Monthly Report, Agricultural Department, S. C.
 New England Farmer.
 New Dairy.
 Nebraska Farmer.
 New York Observer.
 New York Weekly Tribune.
 Orange Judd Farmer, Chicago.
 Orchard and Garden, Little Silver, N. J.
 Our Dumb Animals, Boston.
 Outlook and Sabbath Quarterly.
 Our Grange Homes.
 Portfolio, The, Boulder, Colo.
 Political Dissenter, Pittsburg, Pa.
 Practical Farmer, Philadelphia.
 Prairie Farmer, Chicago.
 Press, Weekly, Philadelphia.
 Publishers' Post, Gladbrook, Iowa.
 Rural Home, Philadelphia.
 Rural Northwest, Portland, Ore.
 Rural Canadian.
 Santa Rosa (Cal.) Republican.
 Sanitary Volunteer, Concord, N. H.
 School and Home, St. Louis.
 Skordemann, Minneapolis, Minn.
 Southern Cultivator and Dixie Farmer.
 Southern Live-Stock Journal, Starkville, Miss.
 Southern Workman and Hampton School Record.
 Speculum, Lansing, Mich.
 Tariff League Bulletin.
 Teacher, The, New York.
 Travelers' Record, Hartford, Conn.
 Unity.
 Valley Spirit, Chambersburg, Pa.
 Vick's Magazine, Rochester, N. Y.
 Voice, New York.
 Western Agriculturist, Quincy, Ill.
 Western Farmer, Sioux City, Iowa.
 Western Plowman, Moline, Ill.
 Western Rural, Chicago.
 Western Stockman and Cultivator, Omaha, Neb.
 Western Swineherd, Geneseo, Ill.
 Woman's Column, Boston.

APPENDIX.

Columbian History of the Kansas State Agricultural College.

BY

J. D. WALTERS, M.S.,
PROFESSOR OF INDUSTRIAL ART AND DESIGNING.

1893.

"I am telling my friends in Massachusetts a very bitter thing, and I have become bolder and bolder in saying that I am under the impression that the whole system of popular education is superannuated; that what is taught is no longer the food that the rising generations most want; and that the very knowledge that is taught is not the best; so that I would change both the substance and the methods."—LOUIS AGASSIZ.

PREFACE.

ON February 19, 1893, it will be 30 years since the Kansas State Agricultural College was founded and located. For a new State, and one that made history as fast as the trans-Missourian countries did, this is a long period. Many of the men to whose energy the people of Kansas owe this magnificent institution of learning—the largest agricultural school in the world—have left to conquer other Territories, some have followed more remunerative or attractive callings than that of the educator of farmers' sons and farmers' daughters, and many have died. The close of the century may find but few of the pioneers in health and vigor. If a history including the valuable element of personal recollection was to be written, the work could not be deferred much longer.

The author believes that the facts related in this history are sufficient to give those who may interest themselves in the College a fairly complete and entirely truthful picture of its development and growth; more than this is not intended. An active participation for over 16 years in the work of the Faculty as one of its members, a persistent effort for over half of this time to obtain the necessary data, and a personal acquaintance with nearly all the men named, ought to give some weight to statements that may conflict with other versions or views.

JOHN DANIEL WALTERS.

MANHATTAN, KAS., January, 1893.

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STUDENTS AT WORK IN THE GARDENS.

COLUMBIAN HISTORY OF THE KANSAS STATE AGRICULTURAL COLLEGE.

I.

BLUEMONT CENTRAL COLLEGE.

THE Kansas State Agricultural College owes its location and initiative momentum to the pioneers of Manhattan. The city was founded in 1855 by the coöperation of two colonies—one from New England, arriving March 24, and one from Cincinnati, arriving June 1. Among the members of the New England colony were several college graduates, and it is stated that the founding of a college was discussed and decided upon during the voyage, long before reaching the objective point of the expedition, the confluence of the Big Blue and Kaw rivers.

From necessity the project had to be deferred for a while, but it was not abandoned. As early as 1857, when the buffaloes were yet numerous in the northern part of Riley county, and less than three summers had bleached the roof of the first house west of the Blue river, an association was formed to build a college in or near Manhattan, to be under control of the Methodist Episcopal Church of Kansas, and to be called "Bluemont Central College."

The charter was approved February 9, 1858. It provided for the establishment of a classical college, but contained the following (in the light of future history) interesting section:

The said association shall have power and authority to establish, in addition to the literary department of arts and sciences, an agricultural department, with separate professors, to test soils, experiment in the raising of crops, the cultivation of trees, etc., upon a farm set apart for the purpose, so as to bring out to the utmost practical results the agricultural advantages of Kansas, especially the capabilities of the high prairie lands.

The leading members of the association were: Rev. Joseph Denison, D. D., afterwards President of the College; Isaac T. Goodnow, elected State Superintendent in 1862, reëlected in 1864; Rev. W. Marlatt, now a model farmer on College Hill; S. C. Pomeroy, afterwards United States Senator.

A site of 100 acres was selected for the institution upon the rising ground about one mile west from the town, and the title secured by special act of

Congress introduced and fathered by Senator Pomeroy. The Cincinnati Town Company promised liberal aid in town lots and town stock, but coupled their promise with the illiberal clause that the aid should not be delivered until the college association could show property to the amount of \$100,000. The New England Town Company gave 50 shares of stock in the north half of Manhattan, representing 100 city lots. I. T. Goodnow, assisted by Doctor Denison, sold these, and by personal solicitation here and in the East obtained funds for a building. Many of the founders must have taxed themselves quite heavily. G. S. Park, S. D. Houston, Joseph Denison, John Kimball, J. S. Goodnow, I. T. Goodnow and Washington Marlatt gave \$300 each, which were princely gifts when measured by the financial condition of these pioneers. The whole amount of cash collected from all sources at the time amounted to \$4,000.

The corner-stone was laid with elaborate ceremony, May 10, 1859, with speeches from General Pomeroy and others, and the institution was opened for the reception of students about one year thereafter. It was a poor time



BLUEMONT BUILDING.

and place, however, for building up a college. The squatters had nothing to give, the students were scarce, the Methodist Episcopal Church of the Territory had two other educational institutions to support, and the country was disturbed by the bloody preambles of the War of the Rebellion. The first annual report of the institution to the Kansas and Nebraska Methodist Episcopal Conference gives the names of 53 pupils, under the charge of Rev. Washington Marlatt as the principal teacher, and Miss Julia A. Bailey as the

assistant. The salary of Rev. Marlatt for 1860 was \$600, and was to be paid in Bluemont City town lots—lots that never had a more than nominal value. No wonder that he complained: "The labor of teaching is great enough for two persons, while the income is barely sufficient to pay the board for one."

Upon the admission of Kansas as a State, January 29, 1861, the founding of a State University became a probability, and the trustees of Bluemont College, represented by Hon. I. T. Goodnow, were nearly successful in locating that institution at Manhattan by offering their building for this purpose. On March 1 the measure passed both Houses of the Legislature, but met with a veto from Gov. Charles Robinson, who was determined that the State University or the State capital should go to Lawrence. He offered to sign the bill at once if the members of the Legislature from Riley county would assist him to get the State capital for his home city. It was the faithfulness of the Manhattanites to their constituents, who wanted the capital as far west as possible, that lost the State University for Bluemont. A little over a year later another chance presented itself for the college to become a State institution. When, on July 2, 1862, the "agricultural college act" was passed by Congress, the trustees offered it once more to the Legislature, and this time the offer, consisting of 100 acres of land, a plain three-story stone building, measuring 44x60 feet, and containing in the third story a chapel with a curved ceiling, a library with several hundred volumes, and some illustrative apparatus, valued all together at about \$25,000, was accepted.

The act referred to is "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," giving to each State lands to the amount of 30,000 acres for each Senator and Representative in Congress, for "the endowment, support and maintenance of at least one college" for the benefit of "agriculture and the mechanic arts." The bill was passed by Congress in 1859, but was vetoed by President James Buchanan under the pressure of the States Rights party. In 1862 the act was again passed, and the pen that wrote the proclamation of emancipation—the death warrant of American slavery—approved it.

II.

THE MORRILL BILL AND THE ENDOWMENT.

THE so-called "Morrill act," to which the Kansas State Agricultural College owes its endowment, was passed in a most critical period of our national life, and its history is interesting to the student of American institutions from more than one point of view.

The annexation of territory, as the result of the war with Mexico, had added millions of acres of wild land to the large public domain of the United States. At the time of the election of James Buchanan to the presidency, the National Government still had at its command, with constitutional right of disposal, nearly a billion and a half acres. It had not yet squandered an empire to scheming railroad companies, though petitions began to pour in begging for grants for various public and private interests. Agricultural societies throughout the Union, seemingly in concerted action, followed the clamoring multitude by asking for the donation of public lands to the States for the purpose of agricultural education. The agitation took formal shape as early as 1852, when the Legislature of Massachusetts passed a resolution asking Congress for a grant of lands for the purpose of promoting a "National Normal College," as they styled it; and similar propositions, urging that the nation should promote scientific instruction in agriculture, in order to preserve the chief industry of the country, soon came from many sides. It was claimed that the prevailing methods of agriculture were rapidly exhausting the soil, while weeds, insect pests, blights and mildews were overrunning gardens, fields, and orchards.

In 1858, memorials were presented in Congress from the Kentucky and New York agricultural societies, and from the Legislatures of New York, California, and Missouri, praying for lands for educational purposes in State agricultural colleges. Hon. Justin A. Morrill, of Vermont, in speaking of this subject before the House of Representatives, on April 20, 1858, said: "There has been no measure for years which has received so much attention in the various parts of the country as the one now under consideration, so far as the fact can be proved by petitions which have been received from various States, north and south, from State societies, county societies, and from individuals. Petitions have come in almost every day from the commencement of the session."

The bill then before Congress, granting land to the States for agricultural colleges, upon which Mr. Morrill spoke these words, was almost identical with the one which became a law four years later. It was introduced and brought to its passage in the House. The main difference between it and the one which finally won success was, that the former granted only 20,000 acres

of land for each Senator and Representative in Congress, instead of 30,000, finally allowed. Temporary loss resulted, as it does so often, in permanent gain. The first bill passed the House April 22, 1858, and was indorsed by the Senate at the following session, but it met the veto of President Buchanan, February 24, 1859.

The veto message adopts the view of the timid school of interpreters of the constitution, and sets forth the obstacles which the friends of national aid to education and the public-school system had to encounter a generation or two ago. It rested mainly, like the well-known veto of the homestead bill a year later, upon constitutional grounds. He urged the minor objections, that such a measure was inexpedient, in cutting off \$5,000,000 of revenue at a time when it was difficult to meet the expenses of the Government and to sustain public credit; that it would be injurious to the new States, in enabling speculators who might buy the land scrip to withhold their land from settlement, and thus run up the price to the actual settler; that the Government would have no power to follow into the States to see that it was properly executed; and that such a donation would interfere with the growth of established colleges. "It would be better," says the message, "if such an appropriation of land must be made to institutions of learning, to apply it directly to the establishment of professorships of agriculture and the mechanic arts in existing colleges, without the interference of State legislatures."

Undoubtedly some of the objections were strong ones. The history of several of the agricultural schools, where the land was fooled away to land speculators, and the proceeds given to classical institutions, vindicated a number of them only too well; but they were posed simply to furnish a necessary background. He believed that the proposed grant violated the constitution of the United States. He presumed it "undeniable that Congress does not possess the power to appropriate money in the treasury, raised by taxes on the people of the United States, for the purpose of educating the people of the respective States. This would be to collect taxes for every State purpose which Congress might deem expedient and useful—an actual consolidation of the Federal and State governments." The power specifically given to Congress, "to dispose of the territory and other property of the United States," was to be used only for the objects specifically enumerated in the constitution. At least the public lands could not be "given away." He believed that the previously-made donations of the sixteenth sections, and, later, of the thirty-sixth sections, for common schools, and of townships for universities and seminaries, were safely constitutional; but in these transactions the Government had not "given away" land. It had merely acted as a prudent speculator in "disposing of" some land, in order to enhance the price of the balance. The message "purposely avoided any attempt to define what portions of land may be granted, and for what purpose, to improve the value and promote the sale of the remainder, without violating the constitution."

In speaking of this veto, Prof. James Albert Woodburn says:

That would, indeed, have been an interesting definition. It would have squared

the circle in a constitutional sense. For nothing has been more impossible in our constitutional history than to limit, by rigid and permanent written definitions, the constitutional powers of the nation. It is now generally accepted as true that, while a written parchment can define broad principles of government which may not be violated, it cannot contain specifically all the necessary and proper powers which, under varying circumstances, may be exercised by the state. These must be determined by progressive national interpretation. In the doctrine of implied powers there was found "a sleeping giant in the constitution," which has been able at numerous times to assert its strength for the common benefit of all the States. This giant power has been forcibly wielded, always in a beneficent way, in the history of national grants in aid of education within the States. In seeking to promote the public welfare under the same written document, another Congress and a new President found it possible for the nation to extend again a helping hand to the States in the establishment of schools and for the promotion of learning.

"Where there is a lack of argument against a measure," said Mr. Morrill, while facing the veto of his bill, "the constitution is fled to as an inexhaustible source of supply." There was nothing left, though, but to re-introduce it in the House of the Thirty-ninth Congress, where it was again unfavorably reported by the Committee on Public Lands.

In the meantime, however, the measure had found a champion in the person of Senator Wade, of Ohio, and on May 5, 1862, this gentleman introduced in the Senate the bill which, after much opposition, finally became a law. It was postponed and delayed in various ways. Even our Kansas Senator, "Jim" Lane, of Leavenworth, objected to it, because it would, as he thought, exhaust all the valuable public land in his State; and in this he was generally supported by the press. The redeeming feature of Senator Lane's opposition was his unflinching belief that Kansas was "the only State with desirable public lands within its borders," and that, in case the bill should become a law, all other States from New Jersey to Illinois would rush to Kansas to take up her beautiful prairies. Mr. Lane finally fell back on the constitutional objection, and warned the Senate against the danger of "giving to sovereign States the right of entering lands within the sovereign States." Unable to defeat the bill, he and his coadjutors made a fight for the amendment that no more than 1,000,000 acres of the land should be located in any one State by assignees of the lands, and in this they were successful.

The bill, as amended by the Kansas Senator, passed the Senate June 10, 1862, the House one week later, and became a law on July 2, 1862, by receiving the signature of President Abraham Lincoln. The act is as follows:

[Chapter CXXX, *United States Laws 1862.*]

AN ACT donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled :

That there be granted to the several States, for the purposes hereinafter mentioned, an amount of public land, to be apportioned to each State a quantity equal to 30,000 acres for each Senator and Representative in Congress to which the States are respectively entitled by the apportionment under the census of 1860: *Provided*, That no mineral lands shall be selected or purchased under the provisions of this act.

SECTION 2. *And be it further enacted*, That the land aforesaid, after being surveyed, shall be apportioned to the several States in sections or subdivision of sections not less than one-quarter of a section; and whenever there are public lands in a State subject to sale at private entry at \$1.25 per acre, the quantity to which said State shall be entitled shall be selected from such lands within the limits of such State; and the Secretary of the Interior is hereby directed to issue to each of the States in which there is not the quantity of public lands subject to sale at private entry at \$1.25 per acre, to which said State may be entitled under the provisions of this act, land scrip to the amount in acres for the deficiency of its distributive share: said scrip to be sold by said States, and the proceeds thereof applied to the uses and purposes prescribed in this act, and for no other use or purpose whatsoever: *Provided*, That in no case shall any State to which land scrip may thus be issued be allowed to locate the same within the limits of any other State or of any Territory of the United States, but their assignees may thus locate said land scrip upon any of the unappropriated lands of the United States subject to sale at private entry at \$1.25 or less per acre: *And provided further*, That not more than 1,000,000 acres shall be located by such assignees in any one of the States: *And provided further*, That no such location shall be made before one year from the passage of this act.

SEC. 3. *And be it further enacted*, That all the expenses of management, superintendence and taxes from date of selection of said lands previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the States to which they may belong, out of the treasury of said States, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purpose hereinafter mentioned.

SEC. 4. *And be it further enacted*, That all moneys derived from the sale of the lands aforesaid by the States to which the lands are apportioned, and from the sales of land scrip hereinbefore provided, shall be invested in stocks of the United States or of the State, or some other safe stocks, yielding not less than 5 per centum upon the par value of said stocks; and that the money so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished, (except so far as may be provided in section 6 of this act,) and the interest of which shall be inviolably appropriated by each State which may take and claim the benefit of this act to the endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.

SEC. 5. *And be it further enacted*, That the grant of land and land scrip hereby authorized shall be made on the following conditions, to which, as well as to the provisions hereinbefore contained, the previous assent of the several States shall be signified by legislative acts:

First. If any portion of the fund invested, as provided by the foregoing section, or any portion of the interest thereon, shall, by any action or contingency, be diminished or lost, it shall be replaced by the State to which it belongs, so that the capital of the fund shall remain forever undiminished; and the annual interest shall be regularly applied, without diminution, to the purposes mentioned in the fourth section of this act, except that a sum not exceeding 10 per centum upon the amount received by any State under the provisions of this act may be expended for the purchase of lands for sites or experimental farms, whenever authorized by the respective Legislatures of said States.

Second. No portion of said fund, nor the interest thereon, shall be applied directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings.

Third. Any State which may take and claim the benefit of the provisions of this act shall provide, within five years at least, not less than one college, as described in the fourth section of this act, or the grant to such State shall cease; and said State shall be bound to pay the United States the amount received on any lands previously sold, and that the title to purchasers under the State shall be valid.

Fourth. An annual report shall be made regarding the progress of each college, recording any improvements and experiments made, with their costs and results, and such other matters, including State industrial and economical statistics, as may be supposed useful; one copy of which shall be transmitted by mail free, by each, to all the other colleges which may be endowed under the provisions of this act, and also one copy to the Secretary of the Interior.

Fifth. When lands shall be selected from those which have been raised to double their minimum price, in consequence of railroad grants, they shall be computed to the States at the maximum price, and the number of acres proportionately diminished.

Sixth. No State while in a condition of rebellion or insurrection against the Government of the United States shall be entitled to the benefits of this act.

Seventh. No State shall be entitled to the benefits of this act unless it shall express its acceptance thereof, by its Legislature, within two years from the date of its approval by the President.

SEC. 6. *And be it further enacted,* That land scrip issued under the provisions of this act shall not be subject to location until after the first day of January, one thousand eight hundred and sixty-three.

SEC. 7. *And be it further enacted,* That the land officers shall receive the same fee for locating land scrip issued under the provisions of this act as is now allowed for the location of military bounty land warrants under the existing laws: *Provided,* Their maximum compensation shall not be thereby increased.

SEC. 8. *And be it further enacted,* That the Governors of the several States to which scrip shall be issued under this act shall be required to report annually to Congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

THE ENDOWMENT.

Kansas was among the first of the States to accept the proffered endowment. The resolution of the Legislature to "agree and obligate itself to comply with all the provisions of said act" was approved by Governor Carney February 3, 1863, and the resolution to accept the offer of the trustees of Bluemont Central College in "fee-simple" February 16 of the same year. Thus Manhattan became the seat of the Kansas State Agricultural College. The following are the laws of the State relating to these steps:

JOINT RESOLUTION accepting the provisions of an act of Congress, entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2, 1862.

Be it resolved by the Legislature of the State of Kansas:

That the provisions of the act of Congress, entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2, 1862, are hereby ac-

cepted by the State of Kansas; and the State hereby agrees and obligates itself to comply with all the provisions of said act.

Resolved, That upon the approval of this act by the Governor, he is hereby instructed to transmit a certified copy of the same to the Secretary of State and Secretary of the Interior of the United States.

AN ACT to locate and establish a college for the benefit of agricultural and the mechanic arts.

WHEREAS, The Congress of the United States, by an act approved July 2, 1862, and entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," granted to the State of Kansas, upon certain conditions, 90,000 acres of public lands for the endowment, support and maintenance of a college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life; and

WHEREAS, The State of Kansas by its Legislature has expressed its acceptance of the benefits of the said act of Congress, and has agreed to fulfill the conditions therein contained: therefore,

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. That the College, in the foregoing preamble mentioned, be and the same is hereby permanently located at and upon a certain tract of land, situated and being in the county of Riley and the State aforesaid, and bounded and described as follows: Commencing at a point 40 rods east of the northeast corner of the southwest quarter of section number 12, in township number 10 south, and range number 7 east of the sixth principal meridian; thence running south, parallel to the east line of said quarter-section, 80 rods; thence west 200 rods, more or less, to the west line of said quarter-section; thence north on the west line of said quarter-section 80 rods, to the north line of said quarter-section; thence east 200 rods, on the north line of said quarter-section, to the point of beginning, containing 100 acres: *Provided, however*, That the location of said college, as aforesaid, is upon this express condition, that the Bluemont Central College Association, in whom the title of said land is now vested, shall within six months from and after the approval of the Governor hereto, cede to the State of Kansas, in fee-simple, the real estate above described, together with all buildings and appurtenances thereunto belonging; and shall, within such time, transfer and deliver to said State the apparatus and library belonging to said Bluemont Central College Association.

SEC. 2. The Governor of the State is hereby authorized to receive the title papers by which the foregoing mentioned property may be transferred to the State, and to cause the same to be duly recorded in the proper office, and to be deposited in the office of the Auditor of State.

SEC. 3. This act shall be published twice in some newspaper printed at Topeka, and shall take effect and be in force from and after such publication.

Took effect February 19, 1863.

AN ACT to provide for the location of lands granted to the State by act of Congress approved July 2, 1862, and making an appropriation therefor.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. The Governor is hereby authorized to appoint three commissioners to select and locate the lands to which the State is entitled under the act of Congress approved July 2, 1862, entitled "An act donating public lands to the several States

and Territories which may provide colleges for the benefit of agriculture and the mechanic arts;" and such commissioners are hereby authorized and empowered to take any and all steps necessary to the complete location of said lands.

SEC. 2. Each commissioner shall receive the sum of \$3 per day for every day's actual service, and his reasonable expenses; and the Auditor is hereby directed to issue warrants on the treasury for the same upon an account, properly verified under oath, being filed in his office. The commissioners shall make a report to the Governor of all their proceedings under this act, to be transmitted by his excellency to the next Legislature.

SEC. 3. This act shall take effect from and after its passage.

Approved March 3, 1863.

Three commissioners were immediately appointed by the Governor to select the lands. The grant gave 90,000 acres; but as a portion of the selected tracts supposed to be within the railroad limits counted double, the College received but 82,313.52 acres. In the fall of 1866, Hon. J. M. Harvey commenced the appraisal of these lands, and July 27, 1867, reported his work completed. Hon. I. T. Goodnow was appointed Land Agent. Hon. S. D. Houston having, as temporary agent, previously sold a few acres. Mr. Goodnow held the office until the reorganization of the College in 1873, and sold about 42,000 acres, for about \$180,000. His successor, L. R. Elliott, held the office of Land Agent from 1873 to 1883, and sold over 32,000 acres, for about \$240,000. The remainder, some 8,000 acres, was sold for over \$30,000 by Mr. J. B. Gifford, who held the office of Land Agent until after all the land was sold, in 1888. The total fund derived from these sales is \$502,927.35, all of which, except unpaid land contracts, is invested in Kansas school and municipal bonds, paying 6 per cent. interest. The State has made good losses from this fund by unfortunate investment or fraud to the amount of \$3,775.57.

The deficiency of 7,686.48 acres in the amount of land received by the College was closely inquired into, and the still valid claim was presented before the Department of the Interior by Hon. S. J. Crawford, in 1880, and again in 1887, with added proof of its character, afforded by later decisions of the Supreme Court of the United States. When the Secretary of the Interior refused to reopen the case decided adversely in 1880, the matter was brought to the attention of Congress by a joint resolution offered in the House of Representatives by Hon. John A. Anderson, granting to the State the privilege of selecting from public lands still unsold within the limits of the State the amount needed to make up the loss from the original 90,000 acres. The resolution was favorably reported by the Committee on Public Lands, and passed both Houses without objection. President Cleveland, however, vetoed it upon the ground that this State, having selected lands which fell within the limits of the railroad, afterwards located, had received all to which it was rightly entitled.

CONGRESSIONAL APPROPRIATIONS.

In March, 1887, Congress passed the so-called "Hatch bill," which provided for the organization in each State of a station for agricultural experiments, and gave to each station an annual appropriation of \$15,000 for this purpose. The Legislature designated this College as the proper place for such experimental work, and the institution has received since April, 1888, when the first payment was made, \$82,500 from this source. Further particulars with regard to this appropriation, and the very valuable work which it has enabled the College to do in the interest of western agriculture, will be found in another part of this historical sketch.

On August 30, 1890, another act was passed by Congress, the so-called "College aid bill," an act applying a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts established under the provisions of the "Morrill act." It provides for an annual appropriation, beginning with \$15,000 for 1890, with an annual increase for 10 years by an additional sum of \$1,000 over the preceding year, the annual amount thereafter to each State to be \$25,000. A copy of this bill will be found elsewhere in this volume, together with some facts pertaining to its history.

STATE APPROPRIATIONS.

In miscellaneous appropriations, the College has received from the State, since its organization, and including the fiscal year 1892-'93, for which appropriations have been made, about \$283,000. The township of Manhattan, in 1871, donated \$12,000 in bonds. These appropriations were made partly for permanent improvements and partly for running expenses or canceling debts, and do not include pay of Regents, Land and Loan Agents, or for selecting lands. Those of 1866-'70 were first made in shape of a loan, but were donated again in 1870. It will be seen that the average annual State appropriation has been less than \$10,000, while a comparison of the aggregate with the inventory of June, 1892, amounting to \$291,419.85, shows a difference in favor of the College of over \$8,000.

In other words, the present inventory more than accounts for or compensates for every cent the tax-payers of Kansas have contributed toward the upbuilding of the institution.

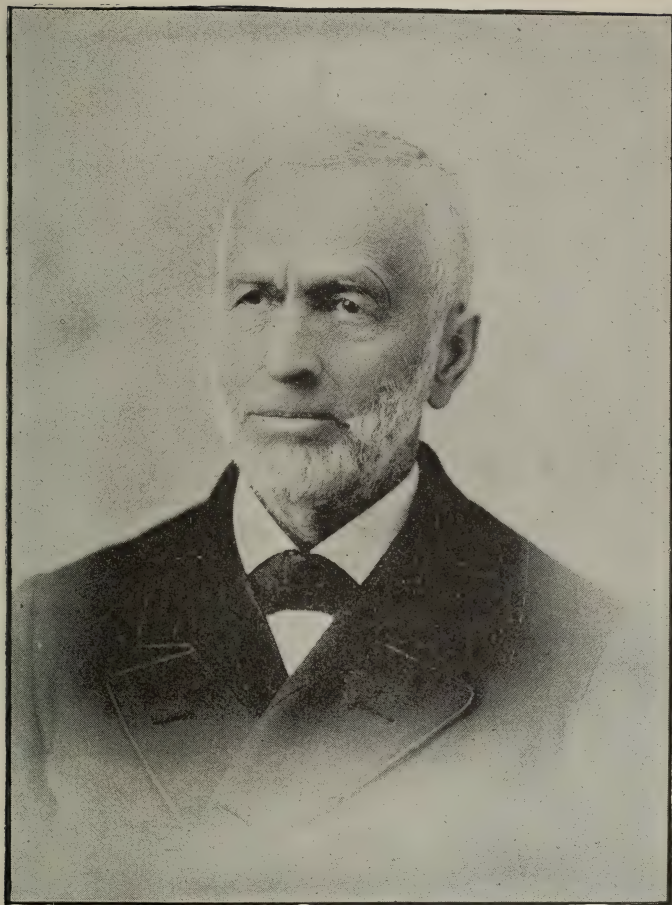
III.

THE AGRICULTURAL COLLEGE IN 1863.—PRESIDENT DENISON.—FROM 1863 TO 1873.—PROFESSOR MUDGE.—STATE APPROPRIATIONS AND PERMANENT IMPROVEMENTS DURING THE FIRST DECADE.

IT is natural that the College should have remained for a time, as it did, under the care of its founders and donators, and as a consequence should have conformed to the ideal before their minds. The charter provided for four departments—science and literature, mechanic arts, agriculture, and military tactics. Of these, that of science and literature was put in operation. The course was laid out to cover four years, with an indefinite preparatory, and conformed closely with that of Bluemont Central College. The first catalogue gives the names of 94 students in the preparatory department and 14 in the College proper. Seventy-four were from Riley county. The Faculty consisted of Rev. Joseph Denison, D. D., A. M., President and Professor of Ancient Languages and Mental and Moral Sciences; J. G. Schnebly, A. M., Professor of Natural Science; Rev. N. O. Preston, A. M., Professor of Mathematics and English Literature; Jeremiah Evarts Platt, Principal of Preparatory Department; Miss Belle Haines, assistant teacher in the Preparatory Department; and Mrs. Eliza C. Beckwith, teacher of instrumental music.

PRESIDENT DENISON.

Joseph Denison, D. D., A. M., the first President of the Kansas State Agricultural College, was born in Bernardston, Franklin county, Massachusetts, October 1, 1815. When he was two years old his parents removed to Cole-rain, in the same county, where they engaged in farming. Here young Denison lived the usual life of the New England farmer boy of those days. In the fall of 1833 he entered Wilbraham Academy to prepare for college, and in 1837 he joined the sophomore class in Wesleyan University, at Middletown, Conn., where he graduated in 1840. In the same year he was elected professor of languages in America Seminary, Dutchess county, New York, and held that position for three years, having for his pupils such men as Alexander Winchell, the renowned geologist, and Albert S. Hunt, the great philanthropist, whose gifts to hospitals and institutions of learning have aggregated \$1,000,000 or more. From 1843 to 1855 he was engaged in the work of the ministry in Massachusetts, and in the spring of the latter year he came to Kansas, settling on a tract of Government land near Manhattan, where he became one of the prime movers in the organization of Bluemont College and afterward its third president. The first president of Bluemont College was I. T. Goodnow, and the second Rev. R. L. Harford. A few years later, when the College became a State institution, he was still its President, holding this



REV. JOSEPH DENISON.

responsible position until 1873, when he resigned, and soon after accepted, for a time, the presidency of Baker University, at Baldwin City. At present he is engaged in the work of the ministry of the Methodist Episcopal Church. Doctor Denison is characterized by his collaborators as a man of conservative views with regard to education, politics, and religion—a typical New Englander of the old school. As a financier, for himself as well as for the institution, he did not prove an entire success, but he was warmly devoted to his work, honest to himself and his trust, and unselfish in every one of his acts. Kansas owes Doctor Denison a debt of gratitude which can never be repaid.

FROM 1863 TO 1873.

During the first 10 years the College grew slowly. Up to 1873, only 15 students had graduated, while the number of students in attendance during any one term never reached 125, and these were mostly from Riley and the adjoining counties. Some of the efforts made by the Faculty to populate the empty school benches seem almost incredible at the present time. "At a Board meeting, December 2, 1863, President Denison stated that he had entered into a contract with the board of directors of the district school of the place to have their scholars instructed during the winter in the College—principally in the Preparatory Department of the institution—for the sum of \$130. At the same meeting, Mr. Jeremiah Evarts Platt was elected to a professorship in the Preparatory Department and Professor of Vocal Music, at a salary of \$600 per annum." (Report of State Commissioners, 1873.)

The catalogue for 1868 gives the number of students present in the winter term as 83, and the report for the fiscal year ending November 30, 1871, states the number of students then present in the different departments as 119—64 gentlemen and 55 ladies. Of the students in the College course proper, in the fall term of 1871, 14 were in the Literary Department and 10 in the Agricultural and Scientific Course. The number of counties of the State represented by students in the three terms of the year 1870 was 22, and the number of other States six. In 1871—*i. e.*, in the common year, not in the school year—27 counties and seven States were represented.

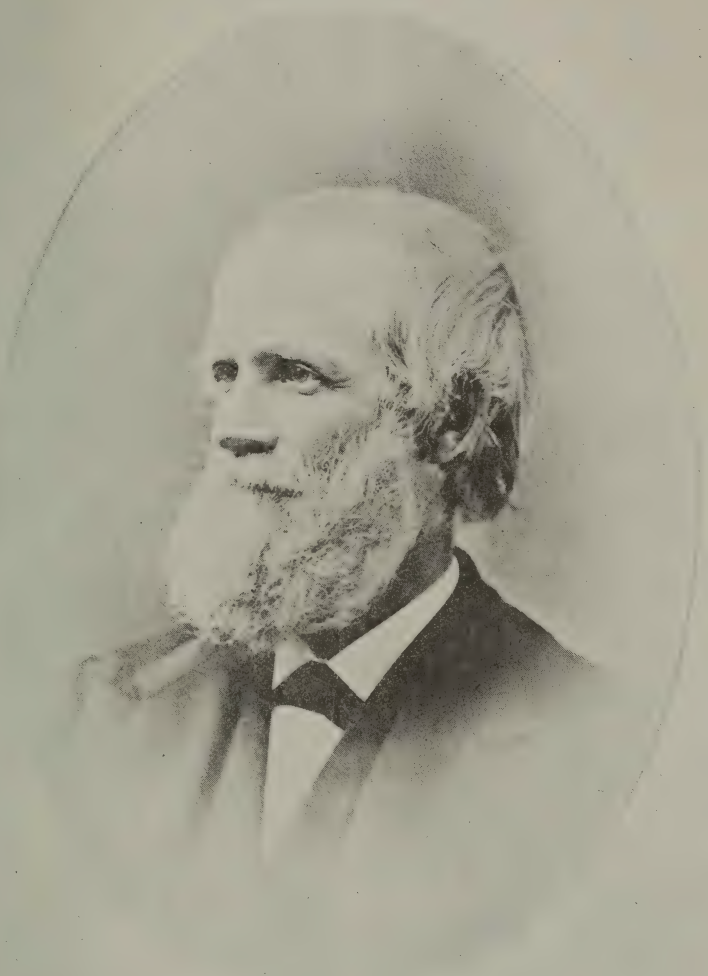
The reasons for this slow growth must be looked for in many directions: The newness of the State, the western location of Manhattan, the inadequacy of means, the founding of rival literary institutions at Lawrence, Baldwin, Topeka, etc., and the fact that industrial education was in its experimental stage. President Denison and a majority of the professors were classic students, and had no faith in the educational results of technical instruction not connected with the classics. They planned to add elective work in practical science and applied mathematics to the "old education," but it was intended to supplement, and not supplant, this. The introduction of obligatory daily manual labor as an educational factor was not attempted. Aside from occasional lectures on general topics, little was done for agriculture and the mechanic arts, and the increasingly frequent demands for an institution that

would educate towards, instead of away from, the farm and the workshop were met with uncertain promises. The Board, largely composed of professional men, must have held similar views, though the report of the State Commissioners of 1873 says that "attempts were made by members of this body at different times to change the curriculum of study, and in other respects to alter the running of the College so as to make it conform more nearly to the demands of the people."

It should not be assumed, however, that the institution failed of doing good work in its class-rooms. The Literary Department was second to no higher school of the kind in the State. The catalogue of 1868-'69 states that up to that time the College had educated at least 80 teachers for the public schools. A considerable number of ministers, especially of the M. E. Church, which still considered the institution as its protégé, and reported it as such at the annual conferences, also received their education here. Nor were the sciences entirely neglected.* Benjamin F. Mudge, A.M., called to the chair of natural science in 1865, was an enthusiastic teacher and an untiring explorer. Aided by some of his pupils, one of whom is now professor of geology at the Kansas State University, Professor Mudge made a large collection of geological specimens and donated it to the College, where it formed a nucleus of the present museum. Being the first "take" in the new State, it contained many specimens which could not have been acquired later.

PROF. BENJAMIN FRANKLIN MUDGE.

Prof. Benjamin Franklin Mudge, A.M., was born in Orriton, Me., August 11, 1817, and died at Manhattan, Kas., November 21, 1879. When Benjamin was two years old, his father's family moved to Lynn, Mass., and engaged in the shoe business. In 1840, B. F. Mudge graduated at Wesleyan University, Middletown, Conn. Some years later this institution honored him with the degree of master of arts. During his vacation, and at odd moments, he diligently pursued his studies in natural history; and although after graduating he entered the legal profession, he never relaxed his interest in science, and gathered here the nucleus of the mineralogical collection which he afterwards presented to the Kansas State Agricultural College. After practicing law for 16 years, during which time he was twice honored with the mayoralty of Lynn, he removed to Cloverport, Ky., where he was connected with the Breckinridge Coal Company. On the breaking out of the rebellion, he removed to Wyandotte county, Kansas, and, his love for geology becoming known, he frequently delivered lectures on his favorite study through the State. In 1864, through the influence of Hon. I. T. Goodnow, Superintendent of Public Instruction, he was invited to deliver a course of lectures before the Legislature, whereupon this body conferred upon him the office of State Geologist—an honor entirely unsought, yet thoroughly enjoyed. While the State appropriation provided for the office but a short time, he was subsequently elected geologist under the State Board of Agriculture, which office he held during life.



PROF. BENJAMIN F. MUDGE.

In 1865, he was elected to fill the chair of natural sciences in the Kansas State Agricultural College, to which institution, with a royal munificence, he donated his entire cabinet, valued at \$3,000. It was during one of his summer excursions that he discovered *Ichthyorhynchus dispar*, a bird with teeth and bi-concave vertebræ. He severed his connection with the College in February, 1874, on account of a serious disagreement with the new management. Like his collaborators, Pres. Joseph Denison, Land Agent I. T. Goodnow, and Prof. H. J. Detmers, he did not believe in industrial education and manual training, and resisted the efforts in reorganizing the College of the newly-appointed Board of Regents and Pres. John A. Anderson, to the extent of leaving his classes and going to Topeka to interview the Governor on these matters. The new management was victorious, and Professor Mudge left the institution where for eight years he had labored so unselfishly and intensely.

The last years of his life he spent chiefly in making collections for Professor Marsh, of Yale College, and thus brought before the scientific world many new and rare discoveries. On Friday, November 21, 1879, the Professor was engaged with his friend Dr. Blachly, of Manhattan, in geologizing on Bluemont ridge north of the city, exercising himself violently with pick and shovel. Upon his return he sat down to read with his family, when, feeling a pressure in his head, he stepped out-of-doors to take a walk, and died there of apoplexy.

Professor Mudge has been called the prince of collectors in the West. He discovered over 80 new species of the fossil flora, and an equally large number of species of the fossil fauna. In 1871, the eminent naturalist, Professor Lesquereux, said of him: "He is the only truly scientific geologist west of the Mississippi river."

To him the State of Kansas owes its first comprehensive geological map; and it was a proper acknowledgment of her indebtedness to his unselfish life-work, when, after his death, in 1879, his name was engraved in one of the wall panels in the Hall of Representatives at the State Capitol, and the Academy of Science erected a massive granite monument upon his grave, overlooking the College building from a neighboring hill.

APPROPRIATIONS FOR 1863-1873.

During the presidency of Mr. Denison, the College received appropriations by the State to the amount of \$77,468.85. There were appropriated, exclusive of pay of Regents, Land and Loan Agents:

For 1864,	\$2,802.25
For 1865,	3,316.50
For 1867,	18,011.10
For 1868,	6,420.00
For 1869,	8,919.00
For 1872,	15,000.00
For 1873,	23,000.00

In miscellaneous appropriations for 1871, the College was given \$2,700, but the amount, for reasons not known to the writer, was never drawn. Quite the reverse seems to have happened in 1866. In the Session Laws of 1867, page 3, section 2, it is seen that there was loaned to the College in 1866 the sum of \$5,500, but the Laws of 1866 contain no act making such appropriation. The Auditor's books show that it was for deficiency of professors' salaries for the years 1864, 1865, and part of 1866.

In the appropriation act of 1867 a condition was inserted, viz.: "The said sum to be taken and deemed a loan from the State of Kansas to the State Agricultural College, to be reimbursed to the State after the State shall have been reimbursed for the \$5,500 lent to said College for the year 1866."

An act approved March 1, 1870, contains the following:

WHEREAS, The State of Kansas has heretofore advanced as a loan from time to time the several sums necessary to pay the salaries of professors in said College, thus complying with the condition that the institution should go into active operation within a limited time, and securing its benefits to the earlier pioneer settlers in the commonwealth: therefore,

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. That the several sums advanced to pay the professors in the Kansas State Agricultural College from the year 1863 to the year 1869, inclusive, be and the same are hereby donated to said College, together with all interest that may have accrued on said sums: *Provided*, That the amount hereby donated shall be used as the Board of Regents of said College may direct: to purchase additional lands for the College farm; to erect buildings; and to develop the Agricultural Department of said College: *And provided*, That the sum of \$1,500 may be appropriated from said donation for the purchase of a proper set of arms and accoutrements for the use of the drill class in the Military Department required by law in said College.

SEC. 2. The Treasurer of the Board of Regents is hereby authorized to pay upon the orders of said Regents an amount equal to the sum donated by this act to said College out of any interest upon the endowment fund that may at any time be in his hands in excess of orders then due for professors' salaries: *Provided*, That if any order drawn upon said Treasurer on account of the donation made by this act shall not be paid on presentation, said Treasurer shall indorse thereon, "Not paid for want of funds;" and any order thus indorsed shall bear interest at the rate of 7 per cent. per annum until paid.

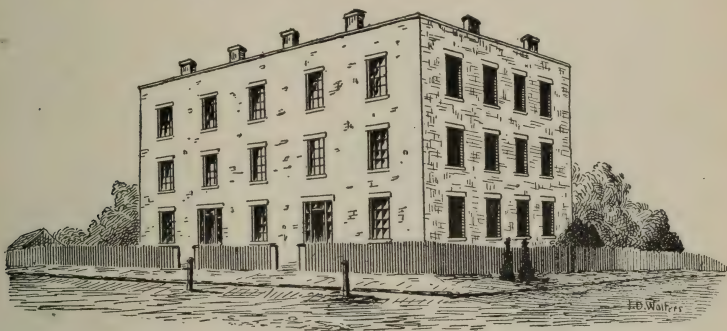
Immediately after the approval of this act, the Board of Regents had engraved or lithographed 364 pieces of scrip, so-called "College greenbacks," of the denomination of \$100 each, made payable at different times for a period of eight years, beginning July 1, 1870. These orders were used in purchasing the farm and supplies for the same, for boarding-house repairs, and for improvements of various kinds. On December 22, 1871, the issue of this depreciated paper was stopped by the Board of Regents, but the \$33,700 already issued proved a serious burden to the institution for many years, on account of the high rate of interest which prevailed at that time in Kansas. The greater part of this obligation (\$28,258.23) was paid in 1874 and 1875 — *i. e.*, after the reorganization — but the remainder drew interest until 1881,

when President Fairchild succeeded in convincing the Legislature that it was their duty to provide for its cancellation.

The Board of State Commissioners, in their reports for 1873 and 1874, intimate that the existence of the College greenback was the result of the incapacity of the management, and the Legislature placed the charge heavily upon the shoulders of President Denison and his associates; but it should be remembered that the State refused to make appropriations to the College for 1866, 1870, and 1871, and that a public institution cannot, like certain orchids, live on Kansas air and rain-water. As a State institution, it ought to have been sustained or abolished.

IMPROVEMENTS MADE IN 1863-1873.

The following is a short synopsis of the material signs of progress and growth during the period: A library of nearly 3,000 volumes was accumulated, chiefly through the efforts of Hon. I. T. Goodnow, who wrote hundreds of soliciting letters to Eastern publishers, philanthropists, and personal friends. In 1867, 80 acres of the farm were enclosed by a stone wall, a few acres hav-

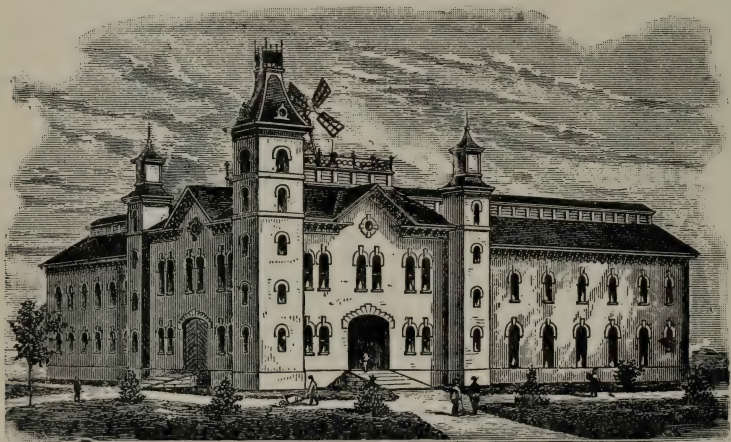


BOARDING HALL.

ing previously been broken. In the same year a capacious student boarding hall was built by resident parties, but, proving a poor financial investment, it was afterwards urged upon the College. At the time of its erection the building met an evident want; but, costing the College over \$10,000, at a time when this was financially embarrassed, the purchase was a misfortune. In 1875, when the College was removed to the new farm, the hall became entirely useless, until, in 1889, after having been sold to a private party for \$1,000, a fire devoured its rotten floors and roofs and calcined its crumbling walls. In 1868, a forest plantation was commenced and an orchard planted. The former contained some 200 varieties of trees, many of which were entirely new to the prairie country, and have since then proved very valuable. The orchard was planted by Mr. Samuel Cutter, of Vinton, at an expense of 50 cents per tree. In the winter of 1868-'69, the Legislature made its first outright appropria-

tion, of \$200, for the Agricultural Department, restricting its use to the purchase of plants, seeds, and agricultural implements. "As a matter of interest, it may be noted that the same Legislature appropriated \$1,400 to furnish tobacco to the convicts in the Penitentiary." In 1869, the broken portions of the farm were rented to Col. Frank Campbell, the steward of the College boarding hall. In 1870, Prof. J. S. Hougham, the first teacher of agriculture and chemistry, planted the first crop, consisting of oats, barley, and corn; but "the oats and barley grew only six to eight inches tall, and the corn was all but destroyed by chinch-bugs." The next crop did much better, though. "In August of the same year the ground was sown to wheat, and in 1871 gave a yield of 43½ bushels per acre."

It had long become apparent to the Board of Regents that the dry and stony piece of upland upon which the College building stood was unsuited for the purpose of conducting agricultural and horticultural experiments. The humus crust was thin and poor, and the subsoil a perfect gravel bed, cemented together by a tough, yellow clay. The final result of many discussions of the



BARN—AS IT WAS TO BE.

matter was, that in July, 1871, two valuable tracts of land were purchased. One of these, the so-called "Ingraham place," consisting of 80 acres of very fine bottom land on the Wildcat creek, about two miles southwest of the College, was never used, but was sold in 1880. The other, adjoining the city of Manhattan, and containing nearly a quarter-section—a beautifully located tract of land—became the site of the present College. Of this, the northwest quarter, about 40 acres, was bought of Mrs. Preston, the widow of Prof. N. O. Preston, who, in February, 1866, had died from apoplexy in the class-room; the northeast quarter, about 40 acres, was bought from Prof. E. Gale; and the south half, about 75 acres, was bought from Mr. Foster. The total cost was \$29,832.71 in scrip. The city of Manhattan, frightened over

the repeated attempts of zealous friends of the State University, at Lawrence, to consolidate the Agricultural College with that institution, contributed \$12,000, the result of a bond election. A solid stone fence was built around the whole tract, and the erection of a large barn commenced—a broad-corniced, massive-looking stone structure, with numerous wings, towers, stairways, elevators, and offices. The barn was never completed, however, and the finished west wing served its purpose for a short time only. It was afterwards, under Pres. John A. Anderson, turned into a class-room building, and still later, under Pres. Geo. T. Fairchild, into a drill hall and museum.

In 1871, Fred. E. Miller was appointed Professor of Agriculture, and means were provided for the purchase of stock, teams, and implements. The foundation was laid for a herd of Short-horns, which still remains the pride of the College. In the following year a Veterinary Department was organized, and put under the management of Prof. H. J. Detmers, V.S., a German by birth and education, who has since then become an authority on the contagious diseases of the hog. The department was discontinued in 1874, for want of means and patronage. A Military Department, organized some years previously, and provided by the Government with a teacher in the person of Brevet Gen. J. M. Davidson, met with the same fate. The Veterinary Department was not revived until 1888, when a chair of veterinary science and physiology was created. The Military Department fared some better, in dating its revival September 1, 1881.

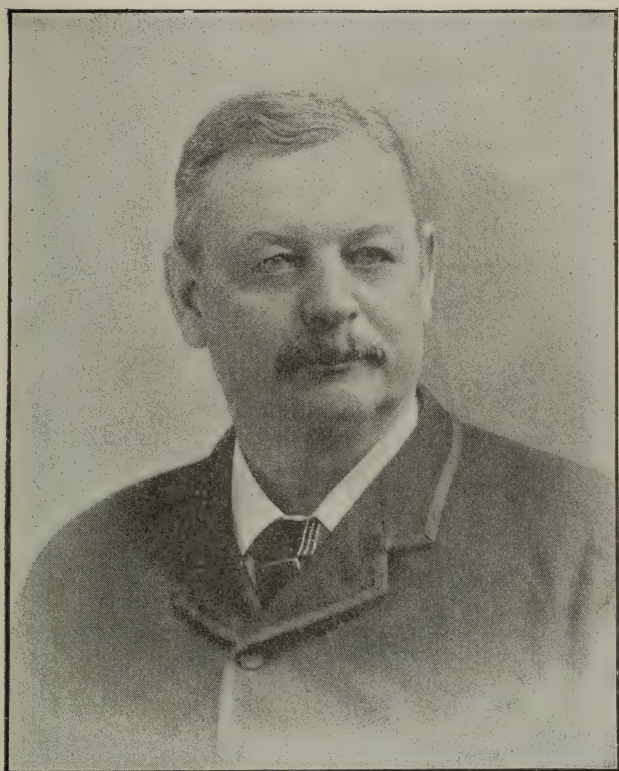
IV.

THE REORGANIZATION.—JOHN A. ANDERSON ELECTED PRESIDENT.—
ANDERSON'S MAXIMS.—THE NEW EDUCATION.—THE INDUSTRIALIST.
—CHARACTERISTICS OF ANDERSON.

IN accordance with an act of the Legislature reconstructing the governments of the several State institutions, approved March 6, 1873, Governor Osborn, in the spring of that year, appointed a new Board. Soon afterwards President Denison resigned, and the vacancy was filled by the election of Rev. John A. Anderson, of Junction City. The result was a radical change in the policy of the institution. To this Board, counting among its members such men as Dr. Charles Reynolds, post chaplain at Fort Riley, and J. K. Hudson, the founder of the *Topeka Daily Capital*, and to President Anderson, the State is indebted for the conception and inauguration of the educational policy which has placed the Kansas State Agricultural College near the head of the list of the land-grant institutions of America.

JOHN A. ANDERSON.

John A. Anderson was born in Washington county, Pennsylvania, June 26, 1834; graduated at Miami University in 1853, the room mate of President Benjamin Harrison; studied theology, and preached in Stockton, Cal., from 1857 till 1862. Early in that year he entered the army as chaplain of the Third California Infantry. In 1863, he entered the service of the United States Sanitary Commission, and his first duty was to act as relief agent of the Twelfth Army Corps. He was next transferred to its central office, in New York. When Grant began the movement through the Wilderness, Anderson was made superintendent of transportation, and had under his command half a dozen steamers. Upon completion of this campaign, he served as assistant superintendent of the canvass and supply department, at Philadelphia, and edited a paper called the *Sanitary Commission Bulletin*. At the close of the war he was transferred to the historical bureau of the commission, at Washington, remaining there one year, collecting data and writing a portion of the history of the commission. In 1866, he was appointed statistician of the Citizens' Association of Pennsylvania, an organization for the purpose of relieving the suffering resulting from pauperism, vagrancy and crime in the large cities. In February, 1868, he accepted a call from the Presbyterian Church at Junction City, Kas., and remained its pastor until the fall of 1873, when he became President of the Kansas State Agricultural College, at Manhattan, which position he held until his election to Congress, in 1878. While President of the College, he was ap-



HON. JOHN A. ANDERSON.

pointed one of the jurors on machine tools for wood, metal and stone at the Centennial Exhibition.

The subsequent history of John A. Anderson is equally characteristic of the man. He served as member of Congress from this district until the spring of 1891. During the fall campaign of 1890, the Farmers' Alliance movement had withdrawn from the ranks of the Republican party much of the element which had elected and reelected him triumphantly in six consecutive elections. Anderson was not renominated, and refused to run "wild." The result was, that the Republican party, as well as its trustworthy leader in this district, lost a seat in Congress. Of the large number of congressional bills which were introduced and advocated by Anderson, may be mentioned the one reducing the postage of letters from 3 to 2 cents, and the one creating an Agricultural Department as a branch of the National Executive Government. In March, 1891, Anderson was appointed consul-general to Cairo, Egypt, and sailed for his new post on April 6; but his already enfeebled constitution could not endure the change of diet and climate. In the following spring he decided to return, and died on his home journey, in Liverpool, England. His remains rest in the cemetery near Junction City, Kas., by the side of his wife and parents.

ANDERSON'S EDUCATIONAL MAXIMS.

In a "Hand-book of the Kansas State Agricultural College," published in 1874, President Anderson fully discussed his reasons for the changes made in the old system, a few of which are epitomized here:

1. It is impossible for most people to find time to study everything that it is important for some men to master.
2. The subjects discarded, in whole or in part, by each separate class of students, should be those that it is supposed will be of least importance to them.
3. Of those retained, prominence should be given to each in proportion to the actual benefit expected to be derived from it.
4. The farmer and mechanic should be as completely educated as the lawyer and minister; but the information that is essential to the one class is often comparatively useless to the other; and it is therefore unjust to compel all classes to pursue the same course of study.
5. Ninety-seven per cent. of the people of Kansas are in the various industrial vocations, and only 3 per cent. in the learned professions; yet prominence is given to the studies that are most useful to the professions instead of those that are most useful to the industrial pursuits. This state of things should be reversed, and the greatest prominence given to the subjects that are the most certain to fit the great majority for the work they should and will pursue.
6. Most young men and young women are unable to go "through" college. Therefore, each year's course of study should, as far as practicable, be complete in itself.
7. The natural effect of exclusive headwork, as contradistinguished from hand-work, is to beget a dislike for the latter.
8. The only way to counteract this tendency is to educate the head and the hands at the same time, so that when a young man leaves college he will be prepared to earn his living in a vocation in which he has fitted himself to excel.

THE NEW EDUCATION.

Adopting these views, the Board of Regents discontinued the school of literature and organized those of agriculture and the mechanic arts. Three new professorships were established, namely: Botany and entomology, Prof. J. S. Whitman; chemistry and physics, Prof. W. K. Kedzie; mathematics, Prof. M. L. Ward. In order to provide better accommodations for the students, the departments of instruction were removed from the old farm to the new one, where the finished wing of the barn was fitted up for class-rooms. Workshops in iron and wood, a printing office, a telegraph office, a kitchen laboratory, and a sewing room were equipped and provided with instructors, and 50 minutes of educational manual labor was added to the daily work of every student. Three years later the course of study was reduced to four years—*i. e.*, the preparatory course was abolished, the teaching of Butler's Analogy, Latin, German, and French discontinued, and the requirements for admission lowered so as to connect the institution directly with the better grade of public schools.

In order to fully appreciate the efforts of President Anderson with regard to the reorganization of the work of instruction, it seems necessary to take a glance at the educational reform movement in other parts of the country. It is a fact not generally known, and one of which Kansas and the friends of this institution may well be proud, that the Kansas State Agricultural College was among the very first free schools of college grade in the United States where systematic daily manual work became an obligatory branch of instruction for all male students, and that it was the first institution of any kind in this country which reduced the minimum age of admission to such instruction to 14 years. There had, of course, been numerous attempts to teach such work before, but it had either been made optional or else it was limited to certain departments. In the Worcester Free Institute, founded in 1865, and opened in November, 1868, the shop work was made obligatory only to the students in the course of mechanical engineering, all of whom were above 16 years of age. In the Industrial University of Illinois, shop work was provided only for the students in the architectural department. In Washington University, at St. Louis, the preparatory or manual training school, which, through the writings and enthusiastic work of its dean, C. M. Woodward, has become the pattern for schools of the kind from the Atlantic to the Pacific, and far beyond, and is usually considered as the pioneer institution that provided systematic instruction in wood and iron work for all of its pupils, made the first experiments in this line in 1872. The work, however, was limited to the polytechnic departments, and the age of admission of the pupils to 15 years, while the manual training school was not organized until June 6, 1879. The Massachusetts Institute of Technology, where the "father of American tool instruction," Pres. J. D. Runkle, developed the analytical system of shop work, an improvement upon the Russian system of Professor Della Vos, did

not commence instruction in iron-work until the spring of 1877. The only American institution, in fact, which gave daily shop instruction to all its pupils, previous to the reconstruction of the Kansas State Agricultural College, was the Stevens Institute of Technology, of Hoboken, N. J., created by the munificence of the great philanthropist, S. A. Stevens. It will be seen from these historic statements of the growth of tool instruction, that President Anderson was well in the front among the educators of the country who foresaw the coming educational changes; that he was a leader rather than a follower.

As might be expected, these changes of educational policy created some friction. Several members of the teaching force, disgusted with the reduction of the purely literary branches of instruction, resigned, while others, resisting the reorganization, were discharged. Even the newly-called members were more or less opposed to some of the methods adopted, especially with regard to the reduction of the course of study from six to four years, and the abolishing of all instruction in Latin. The most intense feeling existed for a while. The students, encouraged by the attitude of the retiring professors, held indignation meetings, while the citizens of Manhattan, considering the fight largely their own, were split into irreconcilable factions—"for Latin" and "against Latin." Petitions were sent to the Board requesting a change of policy in order to save the institution from certain ruin. The aid of the Governor was evoked to remove President Anderson, who was described as an educational charlatan, and a man of unrefined habits and manners; but the management remained firm. Gradually the storm subsided. The new members of the Faculty began to assert their influence; the attendance did not fall off as had been predicted; the Legislature was satisfied with the change; and the "new education," though hardly more than an experiment as yet, had scored another victory.

THE "INDUSTRIALIST."

President Anderson was a prolific and vigorous writer. He defended his policy whenever and wherever he was attacked, and gave no quarter. A chief weapon during the struggle was the *Industrialist*, a small weekly, edited by the Faculty and printed by the Printing Department. The first number appeared on April 24, 1875, and the paper has been issued ever since. The salutatory stated that the *Industrialist* was issued in the interest but not at the expense of the Agricultural College; "in part, to afford the members of the printing classes regular drill in the work of printing and publishing a weekly newspaper; in part, to photograph the work of the several departments of the Agricultural College, for the information of its patrons and the people; in part, to discuss the educational system and methods of Kansas from the stand-point of the rights and necessities of the industrial classes; in part, to contribute, so far as it can, such practical facts of science as may increase the profit or pleasure of the farmers, mechanics or business men or women of Kansas."

The *Industrialist* is now completing its 18th volume, and has become the pattern for dozens of educational papers in Kansas, though it has itself undergone a number of changes since it was started, 18 years ago. In 1877, the original three-column page was increased by one column, a change that nearly doubled its capacity. In 1889, it was again transformed into a three-column paper, but the size of the sheet was retained by increasing the width of the column; and in 1891 an arrangement was made by which the students share in the editorial work.

ANDERSON AS A MAN.

Of the hundreds of personal friends whom John A. Anderson had all over Kansas, none was better fitted, perhaps, to draw a vivid pen picture of his character than Noble L. Prentis, who, when the sad news of Anderson's death arrived in his home State, wrote the following in the *Kansas City Star*:

When I knew him first, he was pastor of the Presbyterian Church at Junction City. He was then in the prime of life—that was 18 years ago—living with his wife and children under the roof of his uncle and aunt, Col. John B. Anderson and wife, who had cared for him and his wife, who was a neice of Mrs. Anderson, from childhood. In those days I saw him day and night, and afterward, when he was, in 1878, the first time a candidate for Congress, we made the canvass together, Mr. Anderson, George W. Martin, myself, and other gentlemen, including the late Judge Nathan Price, of the great district comprising all Kansas north of the Kaw and of the Smoky Hill, at the time the most populous congressional district in the United States, and one of the largest in area. Five hundred miles of the country in extreme northwestern Kansas was made in an ambulance hired, with the driver, at Beloit. The prairies were high and wide, and it was in the brown October, and the appointments were far apart and there was plenty of time for conversation and reverie; and it was safe to say that, by the time the ambulance was back at Beloit and the railroad journeying begun, there was very little that any member of the party had ever dreamed of in his philosophy that was not in the possession of his companions. All the facts and experiences of life, and all the theories concerning this life and the life which is to come, were discussed.

In those days John A. Anderson spoke of all his life; of his student days at Miami; of his friendship there with Ben. Harrison, whom he remembered as a wrestler who would never give up or stay thrown; of his early days in California, when he was the Presbyterian pastor at Stockton, and built a church there; of his journeys in his own sail boat from Stockton to 'Frisco; of Starr King and Bret Harte, and the bright, young literary men he knew there; and of his work as a correspondent of the *San Francisco Bulletin*. Then he spoke of the outbreak of the civil war; of the divided state of things in California; of the division of his church, and the exodus of the Southern element from the church when he called, Sunday, on the god of Grant and Halleck and McClellan to bless the Union armies. He spoke of the raising of the "Bear flag" in Stockton, and the speedy cutting down of the same; and of his own enlistment as a soldier of the Lord and of the United States as chaplain of Col. Patrick Conner's Second California Regiment, and the march across the terrible Humboldt desert to Salt Lake and Camp Douglas. On some days the talk would turn on the sanitary commission, and his connection with it as its quartermaster at the "water base," wherever it might be, at City Point or elsewhere, following with his boats, as near as possible, the movements of the Army of the Potomac. More,

however, than any of these things, he dwelt on his coming to Kansas after the cruel war was over; when he could have had an Eastern church and a good, plodding, easy time, and chose instead to come to Junction City, then a wide-open frontier place, marked by a distinct and plainly visible article of ungodliness; and how they built the fine Presbyterian Church; and how he planted about the wall the spreading ampelopsis, which grows there still; and how the work went on in the hands of about the gayest, heartiest lot of Christians, and with the least affectation of piety, that have ever been gathered in this world.

After he went away to Washington, Kansas and his friends in Kansas saw less of him. His health and spirits were affected from the first by the air of Washington, and he got in the way of passing his vacations in a canoe on one of the northern lakes, with his eldest boy for company. He loved the wide waters, and was a sailor.

He stayed long in Congress, but was far from being a regulation Congressman. He was not in the accepted sense a politician; I am not certain he liked politicians or that they liked him. He was not a good, strict, iron-bound party man. He did many things that the Republican party in Kansas never suggested to him. He advocated measures that "reformers" and "labor men" might have advocated; but he never joined any society of laborers. He had theories of a better world even on this terrestrial ball. Politicians believe in the life that now is, and do not think of good things in the future, or even of the day of judgment. He did. He was one of the few "anti-monopolists" who have ever lived who really took steps to get anything away from the monopolies—as lands they did not own, and back taxes.

In the year 1885, the first great and crushing affliction of his life fell upon him. In the death of his wife, a most noble woman, he lost his best friend. He had known her all his life. She was his companion in youth, the support of his manhood. He kept on at his work in Congress for five years after, but a changed man. His bodily infirmities increased. He had lost his hearing in one ear in his youth from varioloid, and he became deaf in the other. He became indifferent, evidently, and made no fight to speak of for a renomination in 1890. After his retirement from Congress he went away to Egypt as consul-general at Cairo; perhaps with a sick man's hope of recovery in a change—in any change. In that country of wide, burning sands and dead monuments of the dead, he grew worse; at the last he hoped that life might be persuaded to stay by the air and the breeze of home, and died in the attempt to reach home. He was a remarkable man, in fact he was two men. He passed with the crowd for a rough man, careless of proprieties, sometimes of feelings. He was a clergyman; but he could not be persuaded to look and dress as some people think clergymen should. He hated a white neckcloth, he did not always reverence the men who wore them; but he was a sincere believer, from his mother's knee. None knew how gentle he was save the few who had felt the strong pressure of his great, warm hand, or seen his eyes fill with quick-coming tears.

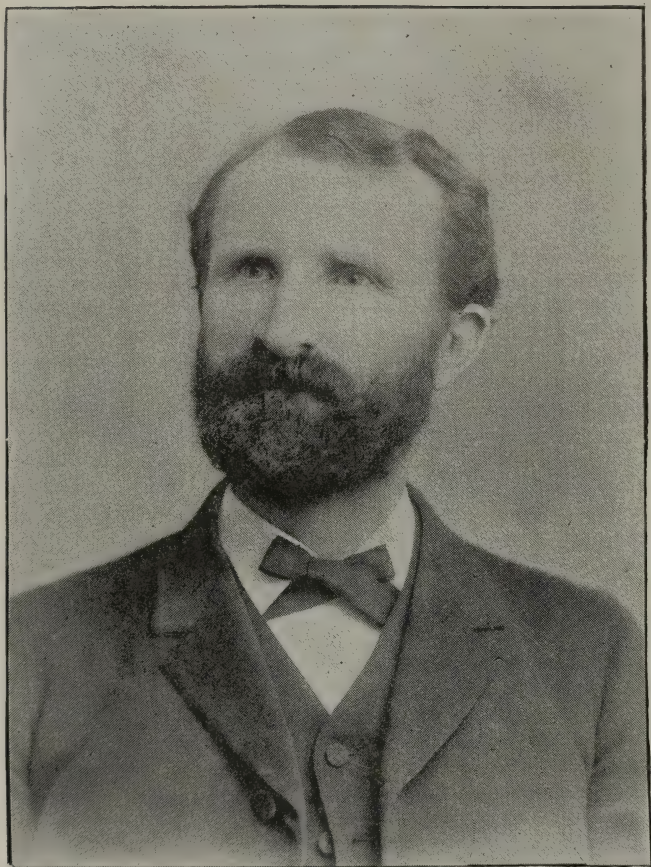
While Anderson is well characterized in the foregoing, there was one element in the man which Prentis failed to mention—his unflinching courage in meeting men and issues. The writer of this sketch, from his own experience can add the following:

In the spring and summer of 1877, the Board of Regents, at the instigation of Anderson, considered the reduction of the course of study from six years to four years, and finally voted the change. There were several reasons for taking the step. In the first place, the common schools of the State had commenced to furnish much better-prepared candidates for admission.

Secondly, it seemed best to place the possibility of graduation before a large number of students, in order to retain them; and thirdly, there was a discouraging lack of means—of class-rooms, laboratories, apparatus, teachers, and funds. The Faculty had debated the question in meeting and in private, and a majority were bitterly opposed to a reduction. Strong reasons were advanced by these, but a main reason for the opposition was usually left untouched—the teachers of the studies that were to be cut out or pruned were afraid of losing their coveted high-grade work. The dissatisfied teachers, in secret meetings held during the summer vacation, finally prepared a carefully-worded petition to the Board, asking for a reconsideration of the step.

President Anderson had gone to Colorado for a mountain tour when he heard of the opposition of the leading members of the Faculty to what he considered a fixed fact, and returned in all haste. A Faculty meeting was called, and in less than 30 minutes the entire opposition was quashed.

The professors were all in his office when he entered with a firm step, called the meeting to order, and stated its object: a discussion of the new course of study, for the purpose of asking the Board for its reconsideration and possible repeal. He then said that he had been informed that some members of the Faculty had concocted plans to have a Board meeting called behind his back. He wanted to know whether he was right; and if so, why the gentlemen had not stated their objections openly, in the usual manner, and at the proper time. No one spoke. He then asked bluntly whether it meant "fight," and added, "if it means fight, you can have fight; just as much as you wish, collectively or individually." No one spoke. He then asked Prof. W. K. Kedzie for an answer, and the Professor began to apologize for his part in the insurrection. He was very sure that he felt kindly toward the President, and had no idea of doing anything disloyal to the management; he had not been in favor of a reduction of the course of study, but always respected President Anderson's motives, and could see some of his reasons. If he had known that the reduction of the course was an accomplished fact, he would not have signed the document. President Anderson replied that it was a fact, that it had been published, and that every one should have known that. Professor Ward was called next, and he made a similar apology. Professor Shelton, who had no private objections to the reduction, followed in the same strain, and the remaining members of the Faculty were equally certain that they had no objections now. President Anderson then jumped up from his reclining chair, thanked the Faculty for their frankness, assumed that all was settled now, spoke words of hope for the coming school year, told of his delightful fishing expeditions in Colorado, and adjourned the meeting.



PROF. E. M. SHELTON.

V.

PRESIDENT ANDERSON'S COLLABORATORS.—LEGISLATIVE APPROPRIATIONS AND PERMANENT IMPROVEMENTS, FROM 1874 TO 1879.—PROFESSOR WARD'S VICE-PRESIDENCY.

AMONG the new members of the Faculty, none entered upon the work of reorganization with more zeal and sympathy, and assisted more effectively in bringing its practical work into favor with the farmers of the State, than Prof. E. M. Shelton, M.Sc., elected to the chair of agriculture in 1874.

Edward Mason Shelton was born in Huntingdonshire, England, August 7, 1846, and in 1855 came with his parents to America, settling in New York. In 1860, the family moved to Michigan. He received his education at the Michigan Agricultural College, graduating in 1871, and took a course of special study under Dr. Manly Miles. At this time an agent of the Japanese government was in this country, seeking men for the advancement of the agricultural interests of Japan, and through him Mr. Shelton was appointed superintendent of the government experiment farm at Tokio. He was the first teacher of American agricultural methods and systematic farming in Japan, and although ill health demanded his return to America at the expiration of a year, he left a strong impression upon the farming interests of that country. He next joined the Greeley colony of Colorado, but soon returned to his agricultural studies and investigations at the Michigan college, and from thence was, in 1874, chosen Professor of Agriculture and Superintendent of the Farm at the Kansas State Agricultural College, in which position he remained until the 1st of January, 1890, when he accepted a call by the Governor of Queensland, Australia, to the honorable and responsible position of agricultural adviser to the government. His writings have been widely quoted, and his influence has been marked upon the trend of agricultural education. He was secretary of the State Short-horn Breeders' Association and of the National Association for the Advancement of Agricultural Science.

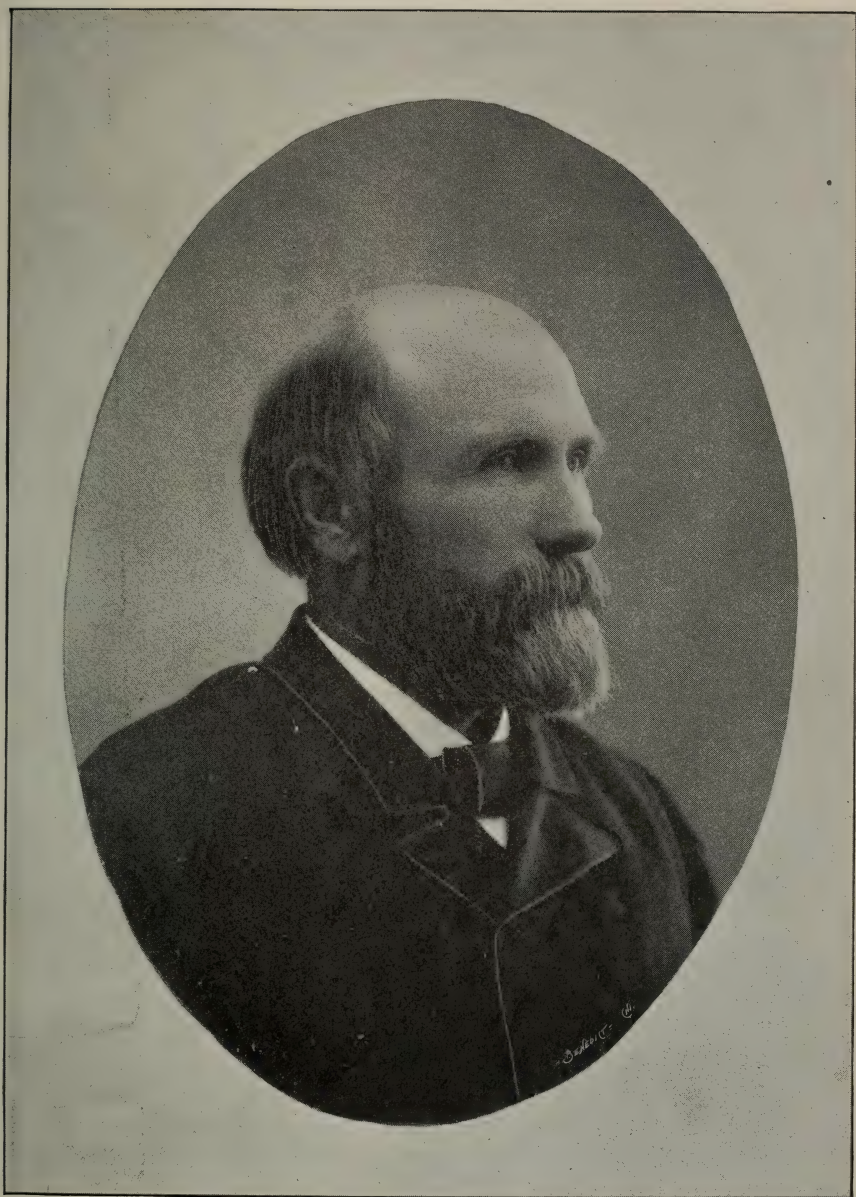
Of other teachers who were elected during the presidency of Anderson, and are entitled to credit for assistance in the work of reconstruction, should be named Professors W. K. Kedzie, M.Sc., M. L. Ward, A.M., J. D. Walters, M.Sc., and G. H. Failyer, M.Sc. The two last named are still members of the Faculty.

Prof. W. K. Kedzie was the eldest son of the veteran teacher of agricultural chemistry at the Michigan Agricultural College, Prof. R. C. Kedzie. He graduated at that institution in 1879, took a special course at the Sheffield Scientific School of Yale College, and became assistant to his father at Lansing, Mich., until his call to Manhattan, in 1873. Coming to the Agricultural

College of Kansas at the time of its reorganization, he lent valuable assistance in shaping the course of instruction, and giving the branches of chemistry, mineralogy, geology and meteorology the prominent position which they deserve in the curriculum of such an institution. While here he wrote a small text-book, "The Geology of Kansas." In 1878, he accepted a call to Oberlin College, Ohio, and died in 1880, in the prime of his life.

Prof. M. L. Ward was brought up on a farm, without early opportunities in school, but graduated from Hamilton College, N. Y., and afterward was ordained to the ministry in the Baptist Church. For some years he, with the assistance of Mrs. Ward, maintained a successful private academy at Ottawa, Kas., and from that was called, in 1873, to the chair of mathematics in this College. In this position, with many fluctuations of duties, he did faithful, energetic work for 10 years, and often helped to hold together conflicting forces in the Faculty by combining earnest regard for the practical side of the new plans with an abiding faith in mental discipline as the foundation of all true education. During President Anderson's congressional campaign, Professor Ward was made Acting President, and, after leaving this College, in 1883, he was called to the presidency of Ottawa University, where he still remains as a member of the faculty.

Prof. John Daniel Walters was born in the canton of Solothurn, or Soleure, in western Switzerland, in 1848. He received his education in the German communal school of Aetigkofen, the French communal school of Dombresson in Val De Ruz, the high school of the county of Bucheggberg, and the cantonal college of Solothurn. Being the graduate of a county high school (Bezirksschule), he entered the third-year class of the college and completed the six years' course in August, 1867. During the summer of 1865 he taught mathematical branches at Klingenberg, the well-known experiment station of Thurgovia. Two months after his graduation, he landed in New York without money or friends, or a knowledge of the English language. After working for a number of years as decorative painter, architectural draughtsman, newspaper editor, and private teacher, he was appointed to the position of teacher of drawing at this College, entering upon his work in January, 1877. In 1883 he was given the degree of master of science, and two years later he was made Professor of the Department of Industrial Art and Designing. The Professor has taken much interest in the work of the National Educational Association. During the meeting of the association at Topeka, in 1886, he was the acting secretary, and at the meeting the following year, in Chicago, the regular secretary of the industrial section. At the meeting in Nashville, in 1889, he read a paper on industrial education, and served on two different committees. He has also read papers before many of the different scientific and practical societies of the State, and has been for many years the chairman of the standing committee on landscape gardening in the State Horticultural Society. In 1891, he published a text-book on free-hand drawing for mature pupils.



PROF. M. L. WARD.

Prof. George H. Failyer was born in December, 1849, on a farm in Mahaska county, Iowa. When he was six years old his father moved to Page county, Iowa, then on the extreme frontier, and settled on a preëmption claim. There he attended the public schools, and afterwards studied at the Amity Academy for two terms. In April, 1868, he accompanied his father to southeast Kansas, and took up a claim in connection with his father on the Cherokee neutral lands. From this time to September, 1873, he was engaged in the usual farm work of a new country. In September, 1873, he entered the third year of the (then) six-year course at this College, and graduated in 1877—having found time during his course for special work in chemistry. After graduation, he taught school for one year in Chautauqua county, Kansas, and was called from there in 1878 to the chair of chemistry of his *alma mater*. In 1879, he received the degree of master of science. From the necessities of the institution, the teaching of various other subjects has at different times fallen to his lot, especially mineralogy, physics, meteorology, and geology. In 1880, he spent a term in special study under Prof. R. C. Kedzie, at the Michigan Agricultural College. He has been one of the chemists of the State Board of Agriculture since 1879, has been president of the Kansas Academy of Science, and is a member of the American Association for the Advancement of Science. At the organization of the State Experiment Station, he was made chemist of the Station. He is the author of a hand-book for students in qualitative analysis, and the inventor of chemical apparatus and methods of some importance in this branch.

STATE APPROPRIATIONS FROM 1874 TO 1879.

During the six years of Mr. Anderson's presidency, the College received appropriations by the State Legislature amounting to \$77,832.93, as follows:

For the year 1874,	\$28,803.23
For the year 1875,	13,675.24
For the year 1876,	15,300.00
For the year 1877,	7,774.46
For the year 1878,	12,500.00
For the year 1879,	1,500.00

Of this amount, \$30,182.92 was received for the purpose of canceling debts and accumulated interest, dating from the administration of President Denison (College greenbacks), and \$48,650 for buildings, repairs, and equipments, especially of the farm and the newly-organized departments of wood-work, printing, sewing, and cooking. The endowment fund having reached a total of \$100,000 at the time of Anderson's election to the presidency, no appropriations were required for meeting the running expenses. It is a fact of which the College can be proud, that from the time of its reorganization, in 1873, to this day, the management never asked the State to contribute a single dollar, and never received a single dollar, for professors' salaries, or the ordinary expenses connected with instruction.

PERMANENT IMPROVEMENTS FROM 1874 TO 1879.

Of permanent improvements during Mr. Anderson's presidency, may be enumerated the building in 1875 of Mechanics' Hall, and in the year following of Horticultural Hall and the Chemical Laboratory — at the time of its erection the best arranged, largest and most complete chemical workshop west of St. Louis. The laboratory was built after sketches by Prof. William K. Kedzie, who, at his own expense, had visited central Europe and the East to study the arrangement and furnishing of chemical workshops. In 1877, the main part of the present barn was constructed, after directions by Prof. E. M. Shelton. The corner-stone of the north wing of the Main College Hall was laid in 1878, and this part of the building completed in February, 1879.

In the summer of 1878, President Anderson was urged by leading Republicans of the (then) First Congressional District to become the candidate of the party for United States Representative. He accepted the honor, feeling that the work at the College requiring his peculiar bent of character, and which, perhaps, but few could have performed, was done. The institution was safe from reaction with regard to its course of study, secure from absorption by the State University, and past the threatening specter of financial ruin. It had no name as yet among the institutions of learning of the land; its attendance was small, its library insignificant, and its apparatus lacked much that was absolutely necessary; but it had found its distinct sphere of usefulness. The debt, which in 1873 had amounted to over \$42,000, was reduced to \$18,000 endowment and \$6,000 current-expense fund. The productive endowment had grown to about \$240,000, and the annual income amounted to nearly \$20,000. Yet his election to Congress in November, 1878, and consequent resignation in August, placed the Board in a perplexing situation. Where should they find a man whose previous work and training would furnish a guaranty for success? There were plenty of candidates; indeed it seemed as if every defunct county superintendent or worn-out preacher in the State believed himself exactly the man to pilot the newly-rigged vessel

"Through squalls and storms,
O'er rocks and riffs."

But no agreement could be reached until the following September, when a member of the Faculty suggested his former teacher, Prof. Geo. T. Fairchild, of Michigan Agricultural College, as a suitable man. Professor Fairchild was "called," came to Manhattan to make a personal examination of the condition of the College, and accepted the responsible position.

IN 1878 AND 1879.

Before entering upon a discussion of President Fairchild's aims and efforts, it seems proper to say a few words of the history of the period intervening between his election and the resignation of President Anderson.

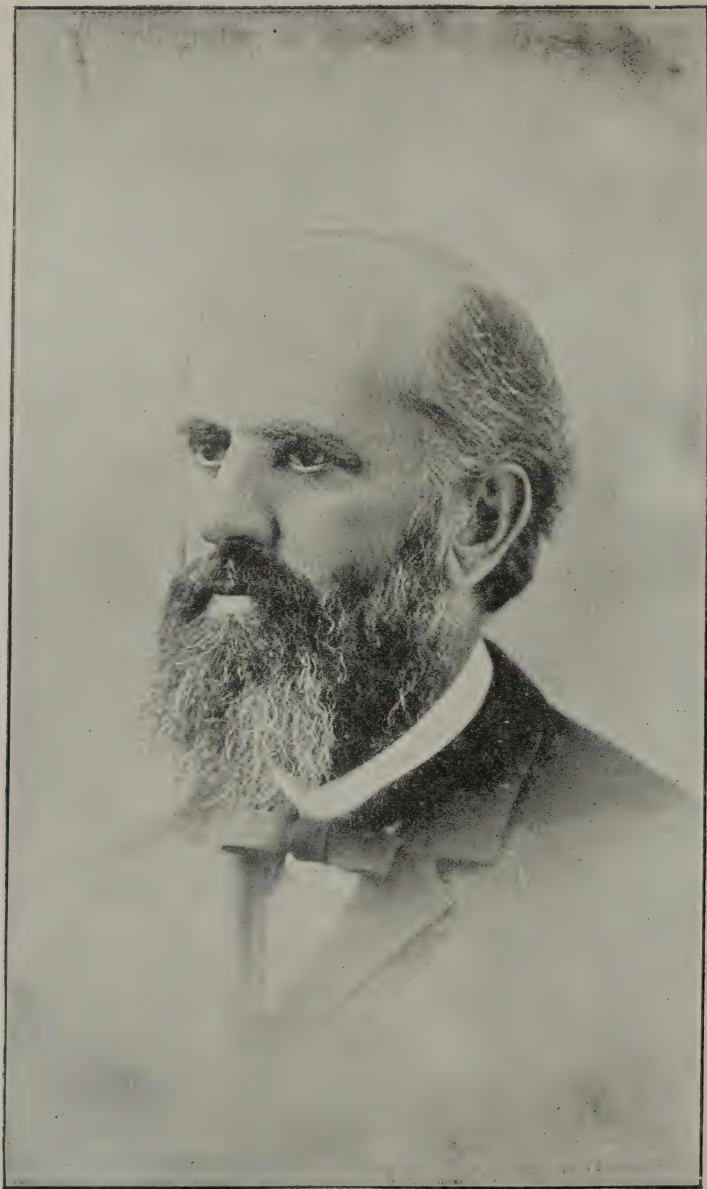
From February to December, 1879, and to some extent from the time of Anderson's nomination for U. S. Representative, the executive work of the College was faithfully performed by the Acting President, Prof. M. L. Ward. It was a trying year for the yet feeble institution. Against Anderson's wishes, the College naturally became the battle ground for much of the usual legitimate and illegitimate campaign work, and the target for his opposition. The Faculty, though loyal to the great trust, was not as harmonious as could have been wished, and there had been changes made in two of the chairs during the summer. All the officers were underpaid and overworked, and there was no chance to increase salaries or the teaching force, for the Legislature of 1877 had decreed "that not over \$15,000 of the interest on the endowment fund shall be used to pay instructors or teachers in said College until the debts of said College be paid in full, and until said College shall refund to the State all moneys advanced by the State to pay for instructors and running expenses of said College." In accordance with this "ukase," the salaries of the majority of the members of the Faculty had been reduced, in some cases as much as \$400, while the work was constantly increasing in all directions. In his department report for 1878-'79, Professor Ward said: "In the discharge of my duties as a professor, I will simply say that I have done as best I could under the circumstances," and a prominent friend of the institution wrote: "It was a year of drudgery and heroic devotion to the cause and to the College, for which the Acting President and his collaborators received neither proper credit on the part of a wrangling Board, nor proper pay on the part of a rich State."

The two instructors elected in September, 1879, were Prof. E. A. Popenoe, A. M. and Sec. I. D. Graham, B. S., both of whom are still connected with the College.

Prof. Edwin Alonzo Popenoe was born in 1853, in Montgomery county, Ohio, and received his primary education in the common schools and in the village high school in McLean county, Illinois. Removing, in 1869, to Topeka, Kas., he began in the following year a preparatory course in Washburn College, where he studied six years, graduating in the classical course in 1876, and receiving the degree of master of arts from the same institution a few years later. After graduation, he taught a year in the Shawnee county schools, and a second as principal of the Quincy school, in North Topeka, resigning the latter position in 1879, to accept the chair of botany and horticulture in the State Agricultural College, where his duties included the instruction of the classes in zoölogy and entomology, and the superintendence of the orchards, gardens, and grounds. At the division of duties in 1883, he was assigned to the chair of horticulture and entomology, which he still occupies. He is a member of the American Ornithologist's Union, a life member in the Kansas State Horticultural Society and in the American Pomological Society, the vice-president for Kansas in the American Forestry Association, and secretary of the American Horticultural Society. He was for many

years secretary of the Kansas Academy of Science, and is one of the official entomologists to the State Board of Agriculture.

Ira Day Graham was born in Vinton, Iowa, on August 29, 1856. Two years later his parents removed to Knox county, Illinois, where he grew up. He received the usual common-school training, and entered Abington College, Abington, Ill., at the age of 16 years. From this college, he received the degree of bachelor of science, and in 1885, the honorary degree of master of arts, from Eureka College, Eureka, Ill. After leaving college, he served several years as a telegraph operator and railroad agent, and taught several terms in the common schools of Illinois and Kansas. In 1879, he was elected Superintendent of Telegraphy in the Kansas State Agricultural College and held this position until 1890. He was elected Secretary of the Faculty in 1881, and in 1884, when the office of Assistant Secretary of the Board of Regents was created, Mr. Graham was appointed thereto. In 1886, he was made instructor in book-keeping and commercial law, and in 1890, Secretary of the Experiment Station. He was for several years treasurer of the Kansas Academy of Science, and was one of the founders of the Kansas Dairy Association.



PRES. GEO. T. FAIRCHILD.

VI.

PRESIDENT FAIRCHILD.—THE AIMS, OBJECTS, METHODS AND EQUIPMENTS OF HIS IDEAL AGRICULTURAL SCHOOL.—A PERIOD OF PROGRESS.—ADDITIONS TO THE FACULTY.—STATE APPROPRIATIONS FROM 1880 TO 1892.—IMPROVEMENTS FROM 1880 TO 1892.—APPARATUS AND LIBRARY.—FARMERS' INSTITUTES.

PRESIDENT GEORGE THOMPSON FAIRCHILD, A. M., was born in Brownhelm, Lorain county, Ohio, October 6, 1838. His father was a farmer and teacher. There were four sons and four daughters, of whom George T. was the youngest. He was educated at Oberlin College, graduated in the classical course in 1862, and in the department of theology in 1865, and, though never a pastor, was afterwards ordained to the ministry of the Congregational Church. In the same year he was elected instructor in the Michigan Agricultural College, and the next year was made professor of English literature, which chair he filled until his call to the presidency of the Kansas State Agricultural College, where he entered upon his work December 1, 1879. During a year's absence of the president of the Michigan college, Professor Fairchild had been acting president by choice of the board of regents. President Fairchild is a prominent member of the National Educational Association, and has contributed several valuable papers to the published proceedings of that body. At the session at Saratoga, N. Y., in 1885, he was made a member of the National Council of Education and appointed to the committee of technological education. At the meeting in Chicago, in 1877, he was made president of the industrial section, and in the following year, at San Francisco, he was reelected to the same position. In 1886, the Faculty of the Kansas State Agricultural College, in order to show him their appreciation of his work, and to give him a fitting token of their esteem, presented him with a life directorship in the National Educational Association. In the American Association of Agricultural Colleges he has twice held the office of vice-president, and his services on important committees have had their directing effect upon that organization. One of his brothers, James H. Fairchild, was for many years president of Oberlin College, and another brother, E. H. Fairchild, president of Berea College, Kentucky.

President Fairchild's views with regard to the "new education" were not as radical as those of Anderson had been. With President Anderson, the Agricultural College had been largely a station for pedagogical experiments, conducted with a view of producing convincing proofs of his theories on the value of manual training. With President Fairchild, the College became a model school for the education of young men and women who were to go back to the farm or workshop, not only to perform manual labor, but to live

complete lives and to develop and honor their calling. In an article on "Our Agricultural Colleges," written for the *Chicago Farmers' Review*, and subsequently published by the Michigan State Board of Agriculture in their annual report, President Fairchild, then professor at the Michigan State Agricultural College, presented his ideal in such a characteristic manner that there could be no doubt in the minds of those who called him to Kansas as to his aims and methods. Other articles and papers, published during the last dozen years, and especially one on "Agricultural Schools: their Aims, Objects, Methods and Equipments," read before the council of the National Educational Association in 1888, show that his subsequent experience as the head of the Kansas institution but corroborated the views of the teacher in the Michigan college. The following is a synopsis of the *Review* article:

THE IDEAL.

In a brief notice of what our agricultural colleges ought to be, it may properly be assumed that they ought to be, first, what the name college implies everywhere now: places for the education of the young. Whatever service they may render in affording models for farming for the public, or in searching for new facts, principles or applications in agriculture, must be secondary. The education which they furnish must be agricultural, in quickening and deepening a young man's regard for a farmer's life, while in every way making him more capable in such life. Learning and labor are to meet in a more profitable life upon the soil. With this understanding, it may be well to consider more specifically

THE AIMS.

Of these there are two classes, closely united: to develop the man in the farmer, and to develop farming through the man engaged in it. The first is to be sought in discipline—the genuine education of the youth. True scientific principles, which underlie all knowledge, are to be taught and enforced by a thorough drill in observation. The eyes must see and the hands handle the very elements of nature, in order to gain proper ideas of nature's use. There must be a definite training to think accurately and connectedly, and intensely if need be. Thinking has made the world's discoveries and inventions, and it will always be the means of progress in any calling. Thinking to a purpose will always distinguish the able man and the efficient work, and our College will have missed its aim if it fails to furnish thorough training to think. Added to this must be the formation of habits of ready action to a purpose. The thinking and doing are so closely united in farming that no one can neglect training in both. Often the only expression of the thought is the act that turns soil and seed, sunshine and shower, into produce. The college must aim at such a combination of thought and action, in its routine of drill for developing the best men for the work of making farming better.

The second is to be sought through information. While this always accompanies discipline and directs the application of ability, it differs from that just as the instruction of a child how to drive a nail differs from the training which enables him to do it successfully. The College must gather and impart the best of instructions in the art of tilling the soil. It must gather from the history of this art, and from the failures and successes of practice and experiment, constantly, such facts as will make the strongest impression. By such means it aims to give higher ideals and stronger ambition to do excellent work. It stimulates discussion and comparison of experiences, and encourages thoughtful consideration of future prospects.

It aims to be a center of information for a farming community through its instruction to learners. So far as is compatible with thorough discipline and accurate information, it aims to be a leader in further improvement of practice by new devices, but consciously preserves the difference between knowledge and supposition, fact and theory. Such aims suggest

THE METHODS.

Most prominent must stand a thorough course of study, long enough to establish principles and habits, severe enough to develop strength of mind, and so associated with agriculture as to cultivate enthusiasm for it. In this there must be systematic instruction by most approved methods in the sciences, training to logical investigation of facts and principles, history and general knowledge of civilization enough to kindle inquiry, and technical training enough to give a general ability.

This involves a drill in manual labor that shall make the hands ready and the eyes quick. That dexterity which comes from long practice in one routine is not desirable at this stage of education, if it were practicable; but a readiness to turn the hand to account in various directions is to be provided for by regular duty in real work, where pay and reputation and responsibility are thought of, and business rules apply, while a zest is given by connection with study and thought under competent oversight. These methods would bear a lengthy study, but we must hasten to connect with them

THE MEANS.

Among these we may place first a permanent endowment sufficient to insure the steady progress of the College through several generations. It should not be subject to the fluctuations of whims from parties or people, but should be an investment for posterity. "Art is long," and the work of education for the art of agriculture must be permanent, in order to be reached by all.

Ample equipment of buildings, furniture and apparatus, farm and tools, is of course necessary. It must even be more ample than in most colleges. Science, to be made practical, must be learned with laboratory practice; technical instruction is worthless without abundant illustration and exercise; and working habits can be formed only by handling the tools.

A competent faculty must handle this machinery. The drill of such a college calls for greater ingenuity, if not for more general culture, on the part of the faculty, than most college courses. This is not mere teaching, but teaching adjusted to a specific want in life. It calls for a practical energy in addition to sound doctrine, for it deals less with authorities than with facts. New applications must keep them fresh in the life of toil which they are to elevate. The best in the land are none too good to hold the professorships in such a college, and should be found and kept if possible.

Over all should preside an efficient and uniform control. The construction of this board should be such as to secure greatest stability with activity. Love for the work must inspire the members, and provident foresight direct them. The whiffing of popular sentiment for pork or mutton, for Short-horns or Jerseys, must only make their course more steady and true to that line of education for farmers' sons which may give taste and ability for an enlightened and progressive agriculture.

A PERIOD OF PROGRESS.

The arrival of Pres. George T. Fairchild gave a new impetus to the teaching force. The wish of the Faculty and the Board, that no radical changes be made in the policy, met with his fullest accord. Yet his rich experience,

the result of similar work at the oldest agricultural school of the land, soon bore fruit in the adoption of improved methods of instruction and a better adjustment of work and existing means. The collegiate year was divided into three nearly equal terms, of 14, 12 and 11 weeks respectively, instead of two unequal terms as before. The course was strengthened by rearrangement of studies to logical connection; by systematic plans for connecting practice with theory; by introduction of stronger courses in place of elementary ones; by more definite classification of students; and by adding a term of psychology to the work of the fourth, and English literature and engineering to the work of the third year. The system of industrial training was broadened by distinct arrangement in shops, farm and garden, kitchen laboratory, dairy, and sewing rooms. The preparatory, or "B" first-year class, which had been organized in 1878 by Acting-President Ward, was maintained only for the benefit of students from the country over 18 years old who could not pass the entering examination. A scheme of Friday afternoon lectures and declamations was inaugurated, and weekly rhetorical exercises were added to the work of all classes. Monday afternoon Faculty meetings for the discussion of ways, means and discipline were organized. Standing committees on grounds and buildings, public exercises, social and literary entertainments, class grades, post-graduate work, farmers' institutes, museum, library, *Industrialist*, physical exercise, etc., were appointed, and a more comprehensive system of accounting adopted—the Secretary of the Faculty, Mr. I. D. Graham, being given direct responsibility for accounts with all funds and all departments.

It is not possible, within the limited space of this sketch, to speak at length of the development of the College during the last 12 years. Many important phases, events or reforms must be overlooked entirely, while many others of a recent date have not had time to produce their intended effects, and can hardly be considered history.

The number of students has increased almost every year, as may be seen from the following schedule:

<i>Year.</i>	<i>Attendance.</i>	<i>Year.</i>	<i>Attendance.</i>	<i>Year.</i>	<i>Attendance.</i>
1878-'79.....	207	1883-'84.....	395	1888-'89.....	445
1879-'80.....	276	1884-'85.....	401	1889-'90.....	514
1880-'81.....	267	1885-'86.....	428	1890-'91.....	590
1881-'82.....	312	1886-'87.....	481	1891-'92.....	584
1882-'83.....	347	1887-'88.....	472		

The senior classes show a similar increase. In 1880, the class numbered 7; in 1888, 22; in 1889, 25; in 1890, 27; in 1891, 52; and in 1892, 36; while the present fourth-year class numbers 42. In other words, since 1879 the number of students has increased nearly 200 per cent., and that of the graduating class has grown over 500 per cent. It is safe to state that there is no educational institution in the United States, no matter how richly endowed, that can show more favorable rate figures with regard to attendance for a period of over 12 successive years.

It is often claimed by the enemies of State institutions for higher education that all such schools are too local in their effect, and do not draw pupils from all parts of the State which is taxed for their support. It is not possible, however, to maintain this charge against the Kansas State Agricultural College. Its students come from all over the State, from nearly every State in the Union, and from many countries abroad. Of the counties, Riley leads, of course, but a large number of students live in Manhattan and vicinity only temporarily, for the sake of college privileges. The following table shows the attendance by counties and States for the last 16 years — *i. e.*, from 1877 to 1892, inclusive:

COUNTIES.	1877...	1878...	1879...	1880...	1881...	1882...	1883...	1884...	1885...	1886...	1887...	1888...	1889...	1890...	1891...	1892...	Total.
Allen.....		1	1	1	1			3		1				2			10
Anderson.....				4	3	2	2				1	3		4	2	2	23
Atchison.....	4	6	4	1		3	4	4	3	9	5	9	5	5	2		64
Barber.....					1									2			3
Barton.....		1		2		1	4	1	1	3	1	2		2		2	20
Bourbon.....					1	1		2		1	2	1		1	1	1	11
Brown.....	1			1		2	6		2	14	8	11	5	3	3	1	57
Butler.....	2	5	6	7	6	2	1	1	1	2	4	3	6	6	4	1	57
Chase.....	1			3	6	1	2	5	4	3	3	2	3		4	3	40
Chautauqua.....		4	4	1	1	2	3	3	4			1	4	1		1	29
Cherokee.....	10	18	18	13	10	3	3	3	1	2	4	2				2	89
Clark.....					1												1
Clay.....	6	10	3	9	10	18	23	26	26	25	21	10	10	10	9	10	226
Cloud.....	1	1				1	8	3	6	6	11	2	2	1	7	4	53
Coffey.....		3	3		1	1	3	2	2	3	4	2	4	3	5	4	40
Cowley.....	1	3	3	5	6	4	1	9	7	3	2	5	5	7	9	2	72
Crawford.....	1	2	2	1					2	1	2	3	2		1		17
Decatur.....							1	1	2	2				1			7
Dickinson.....	3	5	3	4	4	3	4	6	5	4	6	4	3	6	4	3	67
Doniphan.....					2		1	1			2	1	3	2	3	1	16
Douglas.....				1	1	4		2	3	3	6	3	1	2	3	2	31
Elk.....				1		1	6	1	4	1	4	4	1	1	3	3	30
Ellis.....												1	3	2	1		7
Ellsworth.....		2	1		2	2	1	1		2	2			2	2		17
Finney.....									1			2		1	2	3	9
Ford.....	1	1	1				1							1	1	1	7
Franklin.....	2	2		2	1	4	7	6	6		4	3	1	1	5	5	49
Garfield.....																1	1
Geary.....	13	5	6	9	9	6	15	16	6	7	5	5	13	8	13	10	146
Gove.....																3	3
Graham.....											3	2		3	4	3	15
Grant.....															1		1
Greenwood.....	3	2	1	7	3	6	2		1	1	3	4	1	1	1	3	39
Harper.....									1		1		3	3	2	2	11
Harvey.....		1	1				2	2	1	1	1	1	1	1	1	1	14
Jackson.....		2	2	3	6	6	2	2	1	3	4	10	4	5	2	10	62
Jefferson.....	3	4	4	6	11	14	2	6	4	7	12	9	12	21	9	16	140
Jewell.....	2	1	1	2	11	6	10	8	10	7	7	3			2	2	72
Johnson.....	3	10	8	11		5	2	8	8	5	2	2	6	11	13	13	107
Kingman.....									1	2	4	1		1	1	2	12
Kiowa.....												1	3		1	2	7
Labette.....	5		1			3			1		3	3	2	1	4	2	25
Lane.....															1		1
Leavenworth.....	3				2	5	4	1	8	4	5	5	4	1	5	5	52
Lincoln.....		1	2		2		3			1	1	3		1	2	4	20
Linn.....	1			1				1		8	7	7	5	11	4	2	47
Lyon.....	6	7	7	4	5	2		3	2	3	4	3	4		4	2	56
Marion.....				1	1	2	1				1	1	4		2	1	14
Marshall.....	3	4	2	4		3	5	6	7	5	10	9	11	14	9	10	102
McPherson.....	1	3		1	2	3	2	5	4	2	4	4	5	8	8	9	61
Meade.....											3					1	4
Miami.....				1				1	1	3	1	1	3	4		1	18
Mitchell.....	1	4	2	2	4	3	4	3	4		3	1			10	7	48
Montgomery.....		4	3	2		1		2		4	2	1	2				21
Morris.....				3		1	1	8	6	3	6	6	4	9	7	4	58
Nemaha.....	2	6	6	5	1	2	1	4	2	5	9	4	5	2	4	11	69
Neosho.....	2	1	2									1		1	3	1	11
Ness.....									1		1	1	1		3	1	8
Norton.....				1					1			1	1		1	2	7
Osage.....	2	1	2	1		2	6	6	18	5	5	6	9	9	7	24	103

THE FACULTY.

This phenomenal growth made necessary an increase in the teaching force, and this again made possible the assigning of the work of instruction to specialists. Among the teachers of special sciences or arts who were added to the Faculty during this period, and who have identified themselves with the peculiar work of the College, are: Mrs. Nellie S. Kedzie, M.S., a graduate of the College and its present matron, who took charge of the Department of Household Economy and Hygiene in the fall of 1882; Prof. W. A. Kellerman, Ph.D., who was elected to the chair of botany in the fall of 1883; Prof. David E. Lantz, M.S., who became teacher of mathematics and surveying in the fall of 1883; Prof. Oscar E. Olin, who was called to the chair of English language and literature in 1886; Prof. Alexander B. Brown, A.M., who was elected to take charge of the Music Department in the fall of 1886; Prof. Ozni P. Hood, B.S., who entered upon his work as superintendent of the shops and teacher of mechanics and engineering in 1887; Prof. Francis H. White, A.M., who became instructor of history and constitutional law in the fall of 1888; Prof. Charles C. Georgeson, M.S., who was called to the chair of agriculture in the winter of 1890; Prof. Ernest R. Nichols, A.M., who was made instructor in physics in the fall of 1890; Dr. Nelson S. Mayo, D.V.S., M.S., who was elected Professor of Physiology and Veterinary Science in the fall of 1890; Prof. Julius T. Willard, M.S., a graduate of the College, who became Assistant Professor of Chemistry in 1891; Prof. Albert S. Hitchcock, M.S., who was called to the chair of botany in the fall of 1891; and Prof. Silas C. Mason, M.S., a graduate of the College, who was made Assistant Professor of Horticulture in the summer of 1892.

Much of the success and growth of the College is due to the untiring efforts of these teachers, many of a reputation reaching far beyond the limits of the State or even the country. The annual reports of the several State and national societies for the advancement of pure and applied science give witness to the extended work carried on in the studies and laboratories of the College. Prof. W. A. Kellerman, who left the institution in the fall of 1891 to accept a call by the State University of Ohio, with promise of increased salary, published several books on his special branches while here, as "Elements of Botany," a text-book for schools, treating histology, vegetable and economic botany, and organography. At the time of its publication, in 1884, a critic in *Science* said: "It comes nearer to filling a serious gap in botanical literature than any other thus far published." Also, "Plant Analysis, or Key to the Dichotomal Plan for Identifying Plants East of the Mississippi." Also, "Analytical Flora of Kansas," and a "Kansas School Botany." The general use of these works attests their value. The Professor also prepared numerous papers in various State reports, the two of special importance to Kansas being "The Kansas Forest Trees Identified by Leaves and Fruit"—the first work of the kind ever published in the United States—and the "Native

Grasses of Kansas." Prof. Geo. H. Failyer has published a hand-book for students of analytical chemistry; Prof. Edwin A. Popenoe is the author of several students' hand-books on entomology; Prof. A. B. Brown has published a number of text-books on musical theory, and is the author of "Brown's Chromatic Musical Charts;" Prof. J. D. Walters has published a text-book on free-hand drawing and designing, and Prof. Julius T. Willard is about to publish a text-book on organic chemistry.

STATE APPROPRIATIONS FROM 1880 TO 1892.

During the presidency of Mr. Fairchild, the Kansas State Agricultural College has received appropriations by the Legislature as follows:

For the year ending:		June 30, 1887.....	\$5,800 00
June 30, 1881.....	\$20,729 09	June 30, 1888.....	17,328 79
June 30, 1882.....	16,000 00	June 30, 1889.....	7,975 90
June 30, 1883.....	13,500 00	June 30, 1890.....	8,525 28
June 30, 1884.....	6,500 00	June 30, 1891.....	11,315 25
June 30, 1885.....	21,113 44	June 30, 1892.....	6,824 99
June 30, 1886.....	11,600 00	June 30, 1893.....	1,950 00

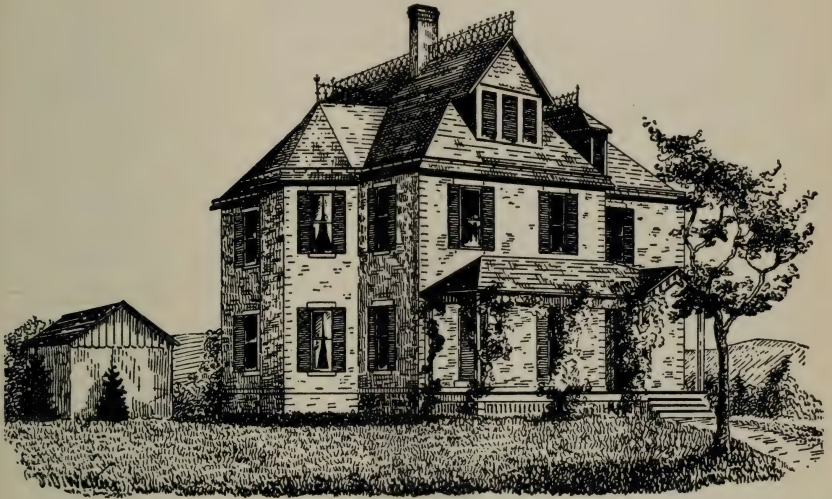
In addition to these cash items, the College has received from the State the necessary printing and binding since 1883, and all needed fuel since 1889 — privileges which, for the last few years, have aggregated between \$2,000 and \$3,000 annually. No appropriations were made for the year ending June 30, 1880, but in the following year the Legislature, in addition to the appropriation stated above, made provisions for the restoration by the State of \$17,979.09 of endowment and income which had become lost to the College from various causes during the past 10 years, and which, according to the organic act, and with the agreement of the Legislature, the State was bound to replace, so that the capital of the fund "shall remain forever undiminished." The main part of the appropriations for this period was received for the erection of the main College Hall and the extensive farm buildings. No appropriations were asked or received for teachers' salaries or running expenses.

IMPROVEMENTS FROM 1880 TO 1892.

The most important improvement made under President Fairchild's administration is the finishing of the main College building, *i. e.*, of its central part, in 1882, of its south wing in 1884, and of its chapel addition in 1887. The building was planned by President Anderson in 1877, and owes its peculiar form of three separate wings or parts, connected by lower corridors, to the expected difficulty of obtaining a sufficient appropriation by the Legislature for the entire completion in one fiscal period. The plans and superintendence were furnished for the principal structure by Architect E. T. Carr, of Leavenworth, and for the chapel addition by Prof. J. D. Walters. President Fairchild changed the original designs in several particulars, notably by adding an attic to the central part and a basement to the south wing — additions which, without materially increasing the cost, improved both the

appearance and the capacity. The building as it now stands has cost about \$70,000.

Of other permanent improvements, may be named the erection, in 1885, of the President's residence, ultimately to become the residence of the Professor of Horticulture; the construction, in 1885, of the north wing of the barn, and the addition to this of the piggery, in 1886; the rebuilding of Armory Hall, in the same year; the placing in Mechanics' Hall of a steam engine and a number of fine wood-working machines, in 1885-'87; the building of the greenhouse, in 1883; the enlargement of the chapel, in 1887; of the horticultural laboratory, in 1888, and of the horticultural barn, in 1889. The plans and superintendence for these buildings were furnished by Prof. J. D. Walters. In 1883 and 1884, the main roads of the farm were graveled, and in the spring of 1885 the grounds were platted for planting and future improvement in road building by a professional landscape gardener, Max. Kern, of St. Louis. In the same year a tract of 44 acres of land was added to the farm by purchase, 16 acres having been added some years previous. In the spring of 1891, another small tract of about four acres was bought. The College now possesses in two farms a total of 319 acres.



THE PRESIDENT'S HOUSE.

In 1888, the city of Manhattan built a very complete system of water-works, with a pumping station near Blue river, and a capacious double reservoir on top of Bluemont, a neighboring hill several feet higher than the tower of the main building of the College. In the following winter the Legislature appropriated \$3,000 for an extension of the pipe line upon the College campus, and about the 4th of July, 1889, the buildings, greenhouses and lawns were supplied with an abundance of pure water—a considerable factor

in the economy of the scientific and agricultural departments, and a safeguard, in case of fire, for the buildings and other property, much of which could not be easily replaced. Another appropriation of \$3,000, made by the Legislature of 1891, for a further extension of the water service, and for water-closets and sewers, has provided the College with a most complete water and drainage system.

The same Legislature appropriated \$4,000 for an addition to the mechanical workshops, for the purpose of providing the needed room for the extension of the course in iron work, and Prof. O. P. Hood, with characteristic inventiveness and energy, and doing a large part of the work with his pupils, built a roomy, well-lighted and ventilated shop, mostly of stone and steel, which will be a model for its purpose for a century to come.

The last inventory of the College enumerates the following lands, buildings, and equipments:

Total number of acres, 319.	Value of farm equipments.....	\$14,396 80
Acres under cultivation, 230.	Value of shops.....	11,500 00
Acres used for experiments, 180.	Value of shop equipments.....	13,115 38
Value of lands,.....	Value of all other buildings.....	114,350 00
Value of farm buildings.....	Value of all other equipments.....	99,137 78

APPARATUS AND LIBRARY.

Carefully-made purchases of scientific apparatus, and untiring efforts in gathering natural-history specimens, have gradually provided the different departments with equipments valued all together at more than \$100,000. Much credit for this is due to individual effort of the professors. The rapidly-growing collections from the fields of zoölogy, botany, entomology, mineralogy and geology have cost the College almost nothing. Not even the Board of Regents, perhaps, are aware of the *esprit du corps* existing among the Faculty with regard to this and other matters. The greatest need of a school of pure and applied science is, however, a large and well selected library, and the establishment of this requires time and funds.

The library is almost wholly the growth of the last 12 years. It was moved to its present quarters in the northeast wing of the main building from the northwest room of the old Bluemont College building, in 1878, by Acting President M. L. Ward, who was the Librarian from 1875 until 1883. It consisted at that time of less than 1,250 valuable and well-preserved books; the remainder, some 800 volumes, were either entirely worn out, or they were works of almost no use or value—old Greek and Latin dictionaries and commentaries, religious monographs, sermons, old and poorly-printed fiction, Government reports, etc.—a state of things not to be wondered at, when it is remembered that the greater part of the growth consisted of donations, solicited in the Eastern States by Pres. Joseph Denison and Agent I. T. Goodnow, and that during Anderson's presidency neither funds nor space were available for this purpose. From that time, however, there was rapid growth. Acting Librarian, Prof. W. H. Cowles, reported the number of books on the

shelves June 30, 1884, at 5,740 bound volumes, 1,300 pamphlets, and several hundred duplicates. A card catalogue of topics, commenced by Professor Cowles, was completed to date, in 1885, by the acting Librarian, Prof. B. F. Nihart.

Prof. D. E. Lantz took charge of the library in September, 1886. His first report catalogues 6,572 bound volumes, 2,350 pamphlets, and 360 duplicates, valued in the aggregate at \$10,358.51. In 1888, the number had grown to 7,453 bound volumes, 2,490 pamphlets, and 352 duplicates, with a total valuation of \$12,172.04; and in 1890, to 9,749 bound volumes, 349 duplicate volumes, and 3,126 pamphlets—a total of 13,224. At present the College library consists of over 12,000 bound volumes and about 4,000 pamphlets, and is valued at over \$21,000. It has been selected mainly with a view to supplementing the class-room instruction in the various departments and the work of the Experiment Station. One of the main endeavors of the Faculty has been to complete the sets of Government and State reports pertaining to agriculture, horticulture, finance, and education. Hundreds of letters were written to Government officers, in all parts of the country, soliciting such volumes. Sets of leading scientific and literary magazines were also completed by picking up missing numbers or volumes wherever there was a chance. The books are indexed in a card catalogue, so that the resources of the library upon any subject may be readily learned. All students have free access to the book-shelves, and may draw the books for home use, under simple and most liberal regulations.

The College subscribes for the leading literary, scientific and agricultural journals; while the principal daily and weekly papers of Kansas and many from other States are received in exchange for the College publications. All these are kept on file for the use of students and Faculty.

The College has been designated as the depository of United States public documents for the Fifth Congressional District of Kansas. About 1,000 volumes have already been received on this account.

An approximate estimate of the number of books, including public reports and bound periodicals, by classes, is as follows:

<i>Classes.</i>	<i>Vols.</i>	<i>Classes.</i>	<i>Vols.</i>
Agriculture	1,350	History	550
Horticulture	500	Biography	450
Mechanics and engineering	425	Geography and travels	300
Mathematics and astronomy	250	Dictionaries and cyclopedias	175
Physics and meteorology	325	Philology	100
Chemistry and mineralogy	300	Education	300
Geology	400	Law	80
Botany	400	Administrative reports	540
Zoölogy	300	Public documents on deposit	920
Entomology	125	Fiction, including juveniles	240
Physiology and sanitary science	250	Essays and literary criticism	300
General science, proceedings	500	Poetry	100
Military science	150	Logic and philosophy	200
Domestic science	75	Religion and morals	500
Political science	325	Fine arts	200
Bound magazines	1,250	Miscellaneous	125

The library is in constant use by the students and the members of the Faculty. The report of the Librarian for the school year 1888-'89 gives the total number of books drawn for home reading by students at 6,777, and the total number for the school year 1889-'90 at 7,898 — an average of over 15 books per student. This does not include the books and magazines read in the library or reading-room, nor does it include the current numbers of periodicals of any kind, since these cannot be taken from the reading-room.

The total of all State appropriations received for the library, up to date, is only about \$6,000. It is greatly deplored by the friends of the College that the State Legislature of 1891 was not able to find means to appropriate more than \$250 annually for the next two fiscal periods for this purpose. A student of science without books is like a mill without water or a stove without fuel. The great need of this College, at this stage of growth, is undoubtedly in the enlargement of its library facilities—it is more books and maps, and a new library building.

FARMERS' INSTITUTES.

The Kansas State Agricultural College has, ever since its foundation, recognized the farmers' institute as one of the best means to disseminate newly-discovered facts and methods pertaining to agriculture and horticulture among those directly interested. Short conventions of the farmers of the vicinity of Manhattan were held at the College every few months as far back as 1864. The first well-organized and widely-advertised farmers' institute under the auspices of the Faculty was held in Manhattan, January 2-10, 1872. It was well attended by representative farmers from all parts of the State. During Anderson's presidency little was done in this direction, chiefly because the newly-organized industrial departments demanded the undivided attention of the teachers; but upon the election of President Fairchild the College at once arranged for the holding every winter of at least six institutes, in as many different counties in the State, and increased the number a few years later to eight, and still later to 10. A permanent Faculty committee was appointed to arrange with parties interested, and there has been a great deal of enthusiasm within and without the institution with regard to this practical work. The farmers' institute has proved a valuable means for strengthening the tie between the College and its patrons, and for bringing the best element of the youth of the State to its class-rooms.

The institutes are usually held during the months of December, January, and February, at such times as may suit the convenience of the several localities; but application is required by the 1st of November, if possible. The plan or programme of these gatherings is very simple. They are meetings of farmers and their families with the representatives from the College for mutual discussion and information upon matters of interest in farm life, including the home. Every interested person becomes a member of the institute by attending, and may share in all the proceedings. The officers are selected

simply to preside in the institute, that the best results may be reached. They are generally men of wide experience and ready suggestion. The institute includes four sessions, beginning Thursday evening and continuing through Friday morning, afternoon, and evening. This is as long a time as farmers can usually arrange to give to meetings, and gives the best results.

The order of exercises is very simple, presenting usually not more than two subjects in each session. This is arranged beforehand by agreement between a local committee and a committee of the Faculty, the one essential being that the community where the institute is held shall furnish one-half the papers or addresses, and be ready to take part in the discussions through questions and experience. The members of the Faculty take part in the discussions as other members of the institute do. The local committee is required to secure a convenient hall, large enough to seat a fair audience, and to take special pains to advertise the institute several weeks in advance. If possible, the local papers are engaged to share in the general interest, both beforehand and during the institute. If reports of the discussions and the local addresses can be published, the profit of the institute is very greatly increased and extended. The local expenses for hall, advertising, etc., are met by the institute. The College sends three or more members of the Faculty, paying all their expenses.

During the last 12 years nearly 100 of such "College extension courses," as these institutes might properly be called, have been conducted under the auspices of the Faculty in different parts of the State. There were held four institutes in each of the counties of Franklin, Jewell, and Wabaunsee; three in each of the counties of Brown, Finney, Marshall, McPherson, Nemaha, Osborne, Johnson, and Rooks; two in each of the counties of Clay, Cloud, Coffey, Cowley, Ellis, Elk, Ellsworth, Ford, Jefferson, Linn, Marion, Osage, Rice, Shawnee, and Trego; one in each of the counties of Atchison, Chautauqua, Cherokee, Geary, Dickinson, Harper, Jackson, Mitchell, Montgomery, Ottawa, Republic, Russell, Sumner, and Washington. Some 15 or more institutes, attended by one or two members of the Faculty, are not enumerated in the statement. In most of the counties where these institutes were held, permanent organizations for effecting such gatherings once a year or oftener have been formed, and the reports from all parts of the State show that the good work has been and is still kept up by local interest. The literary institutions of the State feel elated over their lately achieved or still prospective success in university extension work; the Kansas State Agricultural College rejoices equally in the accomplished success of similar work among the farmers, fruit raisers, and stockmen.

VII.

THE EXPERIMENT STATION.—THE HATCH LAW.—STATION BULLETINS AND REPORTS.

IF there is any section of the country that needs, more than any other, the painstaking assistance of the scientific agriculturist and experimenter, it is the prairie and mountain region of the West, where a climate unlike that of the older part of the United States and the civilized countries of Europe makes the selection of new crop plants and the adoption of new methods of tilling and husbanding an imperative necessity. It is natural that this necessity should have presented itself with great force to the managers of an institution founded for the purpose of educating the youth of the State for the vocation of the farmer. Experimental work in a small way, especially in the important field of forest planting, was commenced as early as 1868, and was continued, as far as the limited means permitted, by Prof. E. Gale, who for many years was the president of the State Horticultural Society. In 1874, Professor Shelton commenced a series of very valuable experiments in the cultivation of tame grasses, continuing his observations of varieties and species under different forms of treatment up to 1889. Later on, experiments were made in subsoiling, listing, feeding, etc. The results were published in the *Industrialist* and in freely-distributed annual reports. Professor Popenoe, following his predecessors in the work of horticulture, made a series of experiments in arboriculture, grape growing, and vegetable gardening. This work was carried on chiefly at the expense of the College, though during the last dozen years the Legislature reluctantly assisted with a few paltry appropriations. In 1888, however, the work gained a new phase by the assistance of the General Government.

The passage by Congress of the "Hatch bill," in March, 1887, provided for the organization in each State of a station for experiments in lines promotive of agriculture. The Legislature at once designated this College as the proper place for the station, and measures were taken for such work. It was found, however, that no appropriation had been made for carrying out the provisions of the bill, and accordingly little could be done until February, 1888, at which time the appropriation was made.

The law, named after Senator Hatch, of Missouri, who was its framer and promoter, is as follows:

AN ACT to establish agricultural experiment stations in connection with the colleges established in the several States under the provisions of an act approved July 2, 1862, and of the acts supplementary thereto.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on

subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under direction of the college or colleges, or agricultural department of colleges, in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an act approved July 2, 1862, entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and mechanic arts," or any of the supplements to said act, a department to be known and designated as an "Agricultural Experiment Station:" *Provided*, That in any State or Territory in which two such colleges have been or may be so established, the appropriation hereinafter made to such State or Territory shall be equally divided between such colleges, unless the Legislature of such State or Territory shall otherwise direct.

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural interests of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

SEC. 3. That in order to secure, as far as practicable, uniformity of methods and results in the work of said stations, it shall be the duty of the United States Commissioner of Agriculture to furnish forms, as far as practicable, for the tabulation of results of investigation or experiments; to indicate from time to time such lines of inquiry as to him shall seem most important; and in general, to furnish such advice and assistance as will best promote the purposes of this act. It shall be the duty of each of said stations, annually, on or before the first day of February, to make to the Governor of the State or Territory in which it is located a full and detailed report of its operations, including a statement of receipts and expenditures, a copy of which report shall be sent to each of said stations, to the Commissioner of Agriculture, and to the Secretary of the Treasury of the United States.

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports, and the annual reports of said stations, shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments, and printing and distributing the results as hereinbefore prescribed, the sum of \$15,000 is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of section 8 of this act, out of any money in the treasury proceeding from the sales of public lands, to be paid in equal quarterly payments on the first day of January, April, July and October in each

year, to the treasurer or other officer duly appointed by the governing boards of said colleges to receive the same, the first payment to be made on the first day of October, 1887: *Provided, however,* That out of the first annual appropriation so received by any station, an amount not exceeding one-fifth may be expended in the erection, enlargement or repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding 5 per centum of such annual appropriation may be so expended.

SEC. 6. That whenever it shall appear to the Secretary of the Treasury, from the annual statement of receipts and expenditures of any of said stations, that a portion of the preceding annual appropriation remains unexpended, such amount shall be deducted from the next succeeding annual appropriation to such station, in order that the amount of money appropriated to any station shall not exceed the amount actually and necessarily required for its maintenance and support.

SEC. 7. That nothing in this act shall be construed to impair or modify the legal relation existing between any of the said colleges and the government of the States or Territories in which they are respectively located.

SEC. 8. That in States having colleges entitled under this section to the benefits of this act, and having also agricultural experiment stations established by law separate from said colleges, such States shall be authorized to apply such benefits to experiments at stations so established by such States; and in case any State shall have established, under provisions of said act of July 2d aforesaid, an agricultural department or experimental station in connection with any university, college or institution not distinctively an agricultural college or school, and said States shall have established or shall hereafter establish a separate agricultural college or school, which shall have connected therewith an experimental farm or station, the Legislature of such State may apply in whole or in part the appropriation by this act made to such agricultural college or school; and no Legislature shall, by contract, express or implied, disable itself from so doing.

SEC. 9. That the grants of moneys authorized by this act are made subject to the legislative assent of the several States and Territories to the purposes of said grants: *Provided,* That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of the Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

SEC. 10. Nothing in this act shall be held or construed as binding the United States to continue any payments from the treasury to any or all of the States or institutions mentioned in this act; but Congress may at any time amend, suspend or repeal any or all of the provisions of this act.

Approved March 1, 1887.

As soon as the news came that the President had signed the above bill, the State Legislature passed the following concurrent resolution:

Be it resolved by the Senate of the State of Kansas, the House concurring, That the annual appropriation of fifteen thousand dollars (\$15,000), made available to the State of Kansas under the act of Congress for the maintenance of an experiment station for the benefit of agriculture, in connection with each college established under the act of Congress approved July 2, 1862, be and is hereby placed under the control of the Board of Regents of the Kansas State Agricultural College, subject to rules and regulations expressed or implied in the act of Congress above named.

Approved March 3, 1887.

These enactments placed \$15,000 in the hands of the Board of Regents

for use during the year ending June 30, 1888, and an equal sum for the year following. The organization of the Experiment Station was at once completed, and the work was begun. The general executive management of the Station was placed under the control of a Council, consisting of the President, the Professors of Agriculture, Horticulture and Entomology, Chemistry, Botany, and Veterinary Science. The President was made *ex-officio* chairman of the Council, and Prof. E. M. Shelton Director of the Station. The organic act permitted the use of one-fifth of the appropriation of the first year for building purposes. From this source the experimental laboratory, with about 2,400 square feet of propagating pits, was constructed. The Station is now well equipped with men and apparatus, and ranks among the most efficient in the country.

Upon the resignation of Prof. E. M. Shelton, in January, 1890, the office of Director was discontinued, and the clerical duties heretofore connected with that office given to the Assistant Secretary of the Board of Regents. The experimenting force of the Station consists at present of five professors and six assistants. Since its organization there have been issued 36 quarterly bulletins and four annual reports, the former containing current matter of general interest to farmers, horticulturists, and stockmen, while the latter include data of all completed experiments, with brief references to those still in progress. All bulletins and reports are distributed free to those who apply for them. The usual edition of the bulletins is 7,500 copies, but the general demand for information on certain subjects has frequently required much larger editions.

The following is a list of the bulletins issued thus far:

1888—No. 1. Organization, Equipment, and Aims.

No. 2. Experience with Cultivated Grasses and Clovers.

No. 3. Life-History of two Orchard Pests.

No. 4. Experiments with Wheat.

No. 5. Sorghum and Sorghum Blight.

1889—No. 6. Silos and Ensilage.

No. 7. Experiments with Wheat.

No. 8. Preliminary Report on Smut in Oats.

No. 9. Experiments in Pig Feeding.

1890—No. 10. Notes on Conifers for Kansas Planters.

No. 11. Experiments with Wheat.

No. 12. Preliminary Experiments with Fungicides for Stinking Smut of Wheat.

No. 13. Experiments with Oats.

No. 14. Winter Protection of Peach Trees, and Notes on Grapes.

No. 15. Additional Experiments and Observations on Oat Smut, made in 1890.

No. 16. Experiments with Sorghum and Sugar Beets.

No. 17. Crossed Varieties of Corn, Second and Third Years.

No. 18. Experiments with Forage Plants.

No. 19. Germination of Weeviled Peas—Garden Notes on Potatoes, Beans, and Cabbage.

- 1891—No. 20. Experiments with Wheat.
No. 21. Fungicides for Stinking Smut of Wheat.
No. 22. Smut of Oats in 1891—Fungicides for Loose Smut of Wheat—
Spraying to Prevent Wheat Rust.
No. 23. Smut of Sorghum and Corn.
No. 24. Staggers of Horses.
No. 25. Sorghum for Sugar.
No. 26. Varieties of the Strawberry.
No. 27. Crossed Varieties of Corn.
No. 28. The Experimental Vineyard.
No. 29. Oats.
No. 30. Corn.
No. 31. Sugar Beets.
No. 32. Chemical and Farm Departments—Miscellaneous.
- 1892—No. 33. Experiments with Wheat.
No. 34. Experiments in Feeding Steers.
No. 35. *Actinomyces bovis*, or "Lump Jaw" of Cattle, and Observations
upon Loco.
No. 36. Experiments with Sorghum and Sugar Beets in 1892.

The total number of bulletins and reports distributed by the Experiment Station during the five years of its existence reaches nearly a quarter of a million, and the demand for them is constantly increasing—a fact that speaks as well for the farmers of the State as it does for the work of the College. Yet much of the work of the Station—the greater part—has not been published, because nearly all field or garden experiments require the corroboration of several seasons before the results can be trusted. In a laboratory experiment, the manipulator can control the conditions to such an extent that a single test will usually determine the existence or non-existence of an anticipated fact; but in the field, the ever-varying conditions of rainfall, wind, frost, drouth, insect pests, rust, etc., cannot be controlled or eliminated so as to give in a single season all the required data for the conclusions sought.

VIII.

THE COLLEGE-AID BILL.—THE NEW COURSE OF STUDY.—POST-GRADUATE WORK AND DEGREES.—THE INDUSTRIAL DEPARTMENTS.—THE FACULTY AND THE BOARD.—A GLIMPSE INTO THE FUTURE.

ON the 25th day of March, 1890, Senator Justin A. Morrill, of Vermont who in 1859 and 1862 had been the prime mover of the agricultural college land-grant bill, carried out his long-expressed intention of introducing a bill for "the more complete endowment and support of colleges for the advancement of scientific and industrial education, and other purposes." The bill was at once referred to the committee on education and labor of the Senate of the United States. As soon as the welcome news reached the executive committee of the Association of American Agricultural Colleges and Experiment Stations, a meeting was called, in order to take active measures to urge its passage in the Fifty-first Congress. A sub-committee was appointed, consisting of President Alvord, of the Maryland Agricultural College; President Lee, of the Mississippi Agricultural College; President Scott, of the Ohio State University; and President Smart, of the Purdue University, to act on behalf of the association. This committee conferred with the Senate committee, and, after several conferences, succeeded in changing the original bill, which included provisions for aiding a large number of schools, and which in that form could never have become a law, to nearly its ultimate language.

Yielding considerably to their opinion, although the common-school feature was a cherished part of his original plan, Senator Morrill prepared a new bill, and introduced it April 30, 1890, as a substitute for the former measure. On May 17 it was favorably reported, with amendments, from the Senate committee, and accompanied by a report which declared that the land-grant institutions had done as well as could have been expected, and emphasized that —

Perhaps contrary to the general impression, the proper equipment of one of these colleges is far more expensive, being at least ten times greater than that of an ordinary classical institution. . . . A college of agriculture and the mechanic arts is not a cheap affair. . . . It will and ought to cost something.

After being discussed on three consecutive days, and amended with regard to the clause referring to the equitable division of the appropriation in States where separate colleges for white and colored students had been established, the bill passed the Senate, on June 23d, by a practically unanimous vote.

On the following day it was read in the House of Representatives and referred to the committee on education, the committee returning it on July 24, without amendment and accompanied by a report. On the 19th of Au-

gust, under a special order, the bill was considered and passed, without a roll-call, by a vote of 135 to 39. One amendment, generally agreed upon and made known in advance, was adopted by the House, and in this the Senate concurred on the following day. The Kansas State Agricultural College may well pride itself with the fact that this amendment, limiting the appropriation "only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life," was unnecessary, since no instruction had been given in its classrooms for years that did not conform with this definition of the meaning of the original Morrill act.

The report of the House committee on education on the condition of the land-grant colleges, and the general status and educational needs of the industrial classes, contained the following interesting paragraphs:

It is no exaggeration to say that the institutions have more than justified the best anticipation entertained by their best friends. This is not to assert that they have in all cases been perfectly successful; but they have steadily adjusted themselves more and more to the requirements of the new situation. They have gathered about themselves a large body of men whose training and experience have prepared them to give thorough and advanced instruction in modern science and its applications. They have collected laboratories, workshops, farms, and apparatus for illustration, experiment, and research. They have so far commended themselves to the people of their several States that large sums of money have been given to provide buildings and equipments suited to their needs, and they have turned out a body of men who, as teachers, investigators, and leaders of industry, rank well up with the same class of men anywhere in the world. According to recent reports of the United States Bureau of Education, they have now more than 10,000 students under instruction, and their graduates are to be found taking high rank in every department of industry. In many States they have come to be recognized as leaders in scientific education, and have done much to create and mold that public sentiment which is now everywhere demanding that the education given in schools of every grade shall, without lowering its aim, prepare more directly for the actual pursuits of industry. Nor is it too much to say that their influence and example have contributed greatly to bring about the enlargement and reorganization of scientific education in the older institutions of the country, thus bringing them more closely into harmony with the spirit and purpose of the age.

One of the most serious drawbacks to the success of these colleges has been the fact that the grant of 1862 was based upon representative population. The result was that a small State or a new one received only a small grant, thus giving the least aid in places where it was most needed; and the grant was still further diminished by reason of so large a quantity of scrip being thrown upon the market at one time, thus reducing the average price to less than 60 cents per acre. The present bill wisely proposes to rectify this inequality by giving an equal amount to each State.

Notwithstanding the prosperous condition of many of these institutions, the fact remains that almost every one of them is crippled for want of adequate funds. The meagerness of the original endowment has been supplemented, in many cases, as we have seen, by the action of the States, but in the great majority of cases the needs of the institutions have far outrun even the most liberal of such appropriations. The fact is recognized, in a general way, that the cost of maintaining scientific edu-

cation is far greater than that of maintaining literary or classical education. More numerous and larger buildings, more apparatus of every kind, and a larger teaching force, are constantly required, and the loss of apparatus and equipment by wear and tear is immeasurably greater. Moreover, the field of science and the methods of applying it in practical life have so greatly enlarged within the last 25 years that none but the wealthiest institutions in the country have found themselves able even passably to meet the requirements of the time. The government of every leading country outside of the United States has recognized the necessity of providing on a large and generous scale for the establishment and maintenance of scientific instruction of every grade, from the primary to the highest, and it is everywhere regarded as one of the first duties of statesmanship to see that the citizens of the country are not left behind in the race of modern competition for lack of any resource that science can bring to their aid. The margin of profit in the competition of modern industries is so small and so closely calculated that *the best instructed people will be the winning people*. It seems not too much to hope that the Government of the United States will, to the slight amount provided for in the pending bill, strengthen the foundations it has already so wisely laid, and thus place itself abreast of the leading thought of the age.

The act was approved by President Harrison, August 30, 1890, and reads as follows:

AN ACT to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts established under the provisions of an act of Congress approved July 2, 1862.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be, and hereby is, annually appropriated, out of any money in the treasury not otherwise appropriated, arising from the sales of public lands, to be paid as hereinafter provided, to each State and Territory, for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts now established, or which may be hereafter established, in accordance with an act of Congress approved July 2, 1862, the sum of \$15,000 for the year ending June 30, 1890, and an annual increase of the amount of such appropriation thereafter for 10 years by an additional sum of \$1,000 over the preceding year, and the annual amount to be paid thereafter to each State and Territory shall be \$25,000, to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with especial reference to their applications in the industries of life, and to the facilities for such instruction: *Provided*, That no money shall be paid out under this act to any State or Territory for the support or maintenance of a college where a distinction of race or color is made in the admission of students, but the establishment and maintenance of such colleges separately for white and colored students shall be held to be a compliance with the provisions of this act if the funds received in such State or Territory be equitably divided as hereinafter set forth: *Provided*, That in any State in which there has been one college established in pursuance of the act of July 2, 1862, and also in which an educational institution of like character has been established, or may be hereafter established, and is now aided by such State from its own revenue, for the education of colored students in agriculture and the mechanic arts, however named or styled, or whether or not it has received money heretofore under the act to which this act is an amendment, the Legislature of such State may propose and report to the Secretary of the Interior a just and equitable division of the fund to be received under

this act between one college for white students and one institution for colored students, established as aforesaid, which shall be divided into parts and paid accordingly, and thereupon such institution for colored students shall be entitled to the benefits of this act and subject to its provisions, as much as it would have been if it had been included under the act of 1862, and the fulfillment of the foregoing provisions shall be taken as a compliance with the provision in reference to separate colleges for white and colored students.

Sec. 2. That the sum hereby appropriated to the States and Territories for the further endowment and support of colleges shall be annually paid on or before the 31st day of July of each year by the Secretary of the Treasury, upon the warrant of the Secretary of the Interior, out of the treasury of the United States, to the State or territorial treasurer, or to such officer as shall be designated by the laws of such State or Territory to receive the same, who shall, upon the order of the trustees of the college or institution for colored students, immediately pay over said sums to the treasurers of the respective colleges or other institutions entitled to receive the same, and such treasurers shall be required to report to the Secretary of Agriculture and to the Secretary of the Interior on or before the 1st day of September of each year a detailed statement of the amount so received, and of its disbursement. The grants of moneys authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grants: *Provided*, That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

Sec. 3. That if any portion of the moneys received by the designated officer of the State or Territory for the further and more complete endowment, support and maintenance of colleges or of institutions for colored students, as provided in this act, shall by any action or contingency be diminished or lost, or be misapplied, it shall be replaced by the State or Territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such State or Territory; no portion of said moneys shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings. An annual report by the president of each of said colleges shall be made to the Secretary of Agriculture, as well as to the Secretary of the Interior, regarding the condition and progress of each college, including statistical information in relation to its receipts and expenditures, its library, the number of its students and professors, and also as to any improvements and experiments made under the direction of any experiment stations attached to said colleges, with their costs and results, and such other industrial and economical statistics as may be regarded as useful, one copy of which shall be transmitted by mail free to all other colleges further endowed under this act.

Sec. 4. That on or before the first day of July of each year, after the passage of this act, the Secretary of the Interior shall ascertain and certify to the Secretary of the Treasury as to each State and Territory, whether it is entitled to receive its share of the annual appropriation for colleges, or of institutions for colored students, under this act, and the amount which thereupon each is entitled, respectively, to receive. If the Secretary of the Interior shall withhold a certificate from any State or Territory of its appropriation, the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the treasury until the close of the next Congress, in order that the State or Territory may, if it should so desire, appeal to Congress from the determination of the Secretary of the Interior. If the next Congress shall not direct such sum to be paid, it shall be covered

into the treasury. And the Secretary of the Interior is hereby charged with the proper administration of this law.

SEC. 5. That the Secretary of the Interior shall annually report to Congress the disbursements which have been made in all the States and Territories, and also whether the appropriation of any State or Territory has been withheld, and if so, the reasons therefor.

SEC. 6. Congress may at any time amend, suspend or repeal any or all of the provisions of this act.

The passage of this bill, which increased the revenue of the College by from \$15,000 to \$25,000 per year, came just in time. The rate of interest, and with this the income from the endowment fund, had been shrinking for about five years, while the expenses had been constantly growing. In the spring of 1890, it seemed a question of only a short time when the institution would have to do one or the other of three very disagreeable things, viz.: Limit its usefulness in some direction, or collect a tuition fee from the students, or ask the State Legislature for an annual appropriation to meet a part of the current expenses. In the report for 1889-'90, the Board of Regents had said: "By strict economy, even by postponing provisions of urgent necessity, the expenses of the past two years have been kept within the limits of the income." Yet, there had been a small balance against the College for several years, partly due to the delinquency of some of the interest-paying parties, but partly also because the College was unable to keep a sufficient working fund on hand between the dates that are named in the bonds for paying the semi-annual interest. In 1890, however, the College received \$15,000 for the current year, and \$16,000 for the year 1891, so that the deficit in the treasury could be covered, the most necessary equipments could be procured, and some additional teaching force could be engaged.

NEW EQUIPMENTS.

Among the means which this increase of the revenues of the College procured, may be mentioned the equipment of the new machine shops and foundry, and the renewing of the hand tools of the carpenter shop.

The Legislature of 1887 had added wood-working machinery to the amount of \$1,000 to the simple hand tools that had been bought from time to time since the reorganization of the College in 1874. This appropriation was sufficient to procure, in addition to the 10-horse-power engine and 20-horse-power boiler already in the building, a fine double-column circular saw, a 24-inch planer, a single-spindle friezer, a 34-inch band saw, four lathes, and numerous attachments. During 1890 the hand tools were increased to 220 complete sets, placed in separate locked drawers under the work benches, so that now each student has a good kit of tools entirely in his charge. The equipment of the new machine shop and foundry has cost about \$4,000. It consists of 16 forges, with a 30-inch exhaust fan, smoke connections, anvils and hand tools, a No. 0 Collian cupola and blower, with ladles, hand ladles, core oven, flasks, etc., for an iron foundry, a brass furnace and 12 moulding

benches, with flasks and hand tools for small brass work. A small upright engine runs the following tools: A 24"x24"x6' planer, four 14"x6' engine lathes, a 12"x5' brass lathe, a speed lathe, a 24" drill press, a sensitive drill press, a pipe cutter, emery wheels, and grindstone. Fifteen vises with 30 locked drawers, each containing a complete kit of hand tools, are provided for hand work.

Of other equipments bought from this source, may be named a fine collection of samples of minerals, for the use of the classes in chemistry, mineralogy, and geology, a set of adjustable drawing tables for the Industrial Art Department, and a papier-maché horse for the Department of Veterinary Science. The mineralogical collection has cost about \$1,100 and is one of the most complete in the country.

THE REVISED COURSE OF STUDY AND THE REQUIREMENTS FOR ADMISSION.

In the spring of 1891, the course of study was strengthened by the addition of one more term in algebra, and broadened by an elective study in the last term of the fourth year. There were also made slight changes in the arrangement of studies. At the same time the requirements for admission were raised, so as to include the passing of an examination in arithmetic complete, and in the ordinary school history of the United States, in addition to the reading, writing, spelling, geography and English grammar required in previous years. Arrangements were also made to receive diplomas and certificates in lieu of entrance examinations, as follows: First, diplomas received on completion of a county course of study which has been approved by the Faculty, when properly signed by the superintendent; second, certificates of passing the grammar grade in any city with a course of study approved by the Faculty, when properly signed by the city superintendent; third, Kansas teachers' certificates issued by the county board of examiners.

Provisions were also made, as in past years, for special classes in arithmetic, grammar, and geography, suited to the advancement of applicants of mature age who, for lack of advantages, are unable to pass the full examination. Young men over 18 years of age and young women over 16 are included in this provision, the object being to secure to such persons an opportunity to gain an education such as the common schools seldom provide for pupils of such age.

Each student is expected to take three studies, besides one hour's daily practice in an industrial art; and variations from this rule can be made only with the consent of the Faculty.

Parallel courses are offered to both sexes, with such differences as their necessities seem to call for. The following gives the general scope of the two:

FIRST YEAR.

Fall Term. Algebra.

English Analysis.

Geometrical Drawing.

Industrial.

Winter Term...Algebra.
 English Composition.
 Book-keeping.
 Free-hand Drawing three times a week.
 Industrial.

Spring Term...Algebra.
 English Structure.
 Botany.
 Industrial (Carpentry or Sewing).

SECOND YEAR.

Fall Term.....Geometry.
 Elementary Chemistry.
 Horticultural.
 Industrial.

Winter Term...Geometry completed, Projection Drawing.
 Agriculture (Household Economy for the young women.)
 Organic Chemistry and Mineralogy.
 Twelve Lectures in Military Science.
 Industrial (Cooking).

Spring Term...Anatomy and Physiology.
 Entomology.
 Analytical Chemistry.
 Twenty Lectures in Military Science.
 Industrial (Farm and Garden or Dairy).

THIRD YEAR.

Fall Term.....Trigonometry and Surveying.
 Agricultural Chemistry.
 General History.
 Industrial (Farm and Garden).

Winter Term...Mechanics.
 Constitutional History and Civil Government.
 Rhetoric.
 Industrial.

Spring Term...Civil Engineering (Hygiene for the young women).
 Physics.
 English Literature.
 Perspective Drawing two hours a week; Drafting two hours.
 Industrial.

FOURTH YEAR.

Fall Term.....Agriculture (Literature for the young women).
 Physics and Meteorology.
 Psychology.
 Industrial.

Winter Term...Logic, Deductive and Inductive.
 Zoölogy.
 Structural Botany.
 Veterinary Science (Floriculture for the young women).
 Industrial.

*Spring Term...*Geology.

Political Economy.

An elective in Agriculture, Horticulture, Mechanics, or related sciences.

Industrial.

A full synopsis of subjects treated and methods followed in all branches of the course may be found in the last annual catalogue.

It will be noticed that the Kansas State Agricultural College is one of the very few liberal institutions of learning where daily educational manual labor forms a part of the programme for every pupil. Many schools have advertised the plan, some have experimented with it, but few have had the pedagogical wisdom, dexterity and energy to execute it on such a scale. They found it impossible to practice what they preached.

Every encouragement is given to habits of daily manual labor during the College course. Only one hour of daily practice in the industrial departments is required; but students are encouraged to make use of other opportunities for adding to their ability and means.

All labor at the College is under the direction of the superintendents of the departments, and offers opportunities for increasing skill and efficiency. In regular weekly statements, the students are required to observe business forms and principles, showing from their daily account when and where the work was performed.

The shops and offices are opened afternoons and Saturdays for the accommodation of skilled students in work for their own advantage. Everywhere the student who works wins respect; and it is a matter of pride to earn one's way as far as possible.

The labor of the students in the industrial departments is principally a part of their education, and is not paid for unless the student is employed upon work for the profit of the College. Students are so employed upon the farm, in the gardens or the shops, and about the buildings. The labor is paid for at rates varying with services rendered, from 8 to 10 cents an hour. The superintendents strive to adjust their work to the necessities of students, and give them the preference in all tasks suitable for their employment. So far as practicable, the work of the shops and offices is turned to account for their benefit; and the increasing extent of the grounds and sample gardens brings more of such labor. The monthly pay-roll of the College for the past year ranges from \$250 to \$400.

Many students also work in the city or upon neighboring farms.

In order to bring the College still closer to the classes for whose benefit it was founded, arrangements are nearly perfected to teach all branches of the course in every term. A farmer's son or young mechanic may then come to College from one to two or three terms per year, as his farm or business shall permit him, and complete the course before his twentieth or twenty-fifth year without disturbing the logical order of educational development. Another step in the same direction has been the organization of an annual short course

in practical science for farmers, dairymen, stock raisers, horticulturists, nurserymen, and gardeners. The first of these courses, covering about 30 lectures by the Faculty and invited specialists, and lasting two weeks, will be given at the College during the month of February. It bids fair to become a complete success.

THE BOARD AND THE FACULTY.

The government of the College rests with a Board of Regents composed of seven persons, of whom one, the President of the Faculty, is *ex officio*, and the remaining six are members by appointment by the Governor, with advice and consent of the Senate. The term of office is three years. The Board have "full and complete power to adopt and enforce all necessary rules and regulations required under the law. They make all appointments of officers, principals, teachers and employés which may be required for the practical and economical management" of the institution.

The Faculty of Instruction is at present composed of 22 professors and instructors, four of whom are women, and is aided by 14 assistants and foremen. Four of the professors and eight of the assistants are graduates of the institution. All the names may be found in the tables of chapter IX.

STUDENTS, GRADUATES, AND POST-GRADUATES.

During the 29 years of its existence, the College has received over 3,000 students, about a third of whom were young women. Most of them have come from farmers' homes, and, after from three months to three years of study, have gone back to such homes without graduation. The catalogue of 1892 publishes the following statistics: The number of graduates up to 1891 is 284, of whom 95 are women. Graduates previous to 1877 pursued, with two exceptions, a classical course, and received the degree of bachelor of arts. Since 1877, all have received the degree of bachelor of science, after a four-years' course in the sciences, with good English training.

Of the 189 men, 5 are deceased, and the remainder are reported in the following occupations:

Farmers.....	34	Superintendents of public schools.....	11
Fruit-growers and nurserymen.....	5	Teachers of public schools.....	24
Stock-raisers.....	2	Students in other institutions.....	5
Assistants in Agricultural Exp't Stations....	4	Officers in army.....	2
Assistants in U. S. Dept. of Agriculture.....	3	Observers in weather service.....	2
Editors of agricultural paper.....	2	Physicians and students of medicine.....	3
Teachers and students of special sciences....	10	Druggist.....	1
Veterinary surgeons.....	3	Dentists.....	3
Mechanics.....	4	Editors.....	9
Civil, electrical and mechanical engineers....	9	Ministers.....	5
Contractors and builders.....	3	Lawyers and students of law.....	20
Architects and draughtsmen.....	3	Officials and official clerks.....	17
General business men.....	8		
Merchants.....	9	Total.....	206
Printers.....	4	In two occupations.....	22
Photographer.....	1		184

Of the 95 women, four are deceased, and the remainder are occupied as follows:

Housewives.....	34	Clerks or stenographers.....	4
At home.....	8	Printer.....	1
Assistant in Sewing Department.....	1	Milliner and dressmaker.....	1
Teachers of household economy.....	3	Assistant Librarian.....	1
Teachers in public schools.....	26	Hospital nurse.....	1
Teachers and students of special sciences.....	5	Students in other institutions.....	2
Teachers of music.....	2		
Teachers of art.....	2	Total.....	91

Before 1880 the College had not had occasion to give the second degree in course, and the conditions under which this academic honor could be obtained, or post-graduate work leading in this direction could be done, had not been formulated and publicly stated. In that year the Faculty adopted a code of rules and published it in the catalogue. Of the 284 students who graduated up to 1891, 68 have pursued post-graduate studies under the adopted scheme, and 29 have been given the second degree.

Arrangements can be made for advanced study in the several departments at any time. Special opportunity for investigation and research is offered at all times to resident graduates in agriculture and agricultural chemistry, physics and chemistry, horticulture and botany, zoölogy and entomology, mathematics, engineering, and drafting. Every facility for advancement in the several arts taught at the College is given such students, though they are not required to pursue industrial training while in such courses.

OBJECT AND AIMS.

The object and aims of the Kansas State Agricultural College cannot be better stated than by quoting from a paper on "Agricultural Schools," presented before the council of the National Educational Association, at San Francisco, July 11, 1888, by Pres. Geo. T. Fairchild:

The subject is one of especial interest now, because the question whether farming must be left to less and less intelligent people as civilization advances is raised in all the older States, where the original type of a farming community is changed for a worse rather than a better. The same state of things in Europe is complained of, and accounted for, in part, by the fact that most of the schools enhance the curiosity and interest as to the gay life of the cities, and add no zest nor interest to the handling of the soil or the feeding of a nation.

Newspapers and books generally present a different ideal of life, and arouse for the plodding of the farm a disrespect and distaste, wholly detrimental to the preservation of our national type. Our people ask, and rightly: "Are the schools doing all that ought to be done for a rural population, the conservatory of national character?" Most of the education given in common schools is purely literary; for the smattering of science interspersed is studied in literary ways. It is knowledge about things, not of them. Hence, as the *New York Evening Post* remarks in a recent number, "It turns the child's thoughts almost wholly toward sedentary pursuits, and to places in which men swarm." In the higher schools this bias is still more potent. Many are avowedly endowed, equipped and maintained as training places for the Christian ministry—all teachers being themselves ministers, and ex-

pected to exalt their calling at every opportunity. Others assume a wider mission, in preparing for the learned professions, including, besides preaching, the practice of law and of medicine, and teaching. Other technical schools, such as those of engineering, civil and mechanical, have had the same drift toward the teeming city and the wealth in trade. If these great intellectual centers have connected with them large elementary schools, as many of them have, in so-called preparatory departments, these are under the same manipulation in tone and trend and kind of information given, so that multitudes drop back into rural life, not simply unsatisfied, but dissatisfied after their taste of learning. If the universities have no elementary schools, they seek to stretch their influence of the same kind over every village high school, and these again must furnish teachers of the same tone to rural neighborhoods. So the conservatism of education is in fact against the conservatism of a well-informed and educated yeomanry.

Now, the presumption is that agricultural schools and colleges have their mission in checking this one-sided tendency. Though in the organization of our land-grant colleges, agriculture and mechanic arts were made coördinate, as the leading interests, I prefer to consider now only their mission to agriculture. They have for their aim, then, the promotion of intelligence in farming, and a fuller appreciation of the ends, means and methods of agriculture as the basis of sound progress.

Shall the higher type of farming and of farmers be sought through training a few experts in scientific agriculture, who, like doctors of physic, may dose to the suffering multitudes the needed potions and lotions and powders for debilitated farms? Or shall the multitudes themselves be inspired from these centers of information and thought, through a widely-extended elementary training in line with improved agriculture? The first thought would make the place of agricultural colleges beside other professional schools in the higher walks of a university, with barely the few students, training themselves for teachers, who are not borne along by the grand tide toward the learned professions. The second would seek to add to this occupation some of the charms of familiar acquaintance with its interesting facts and their relation to the world's work, from the early stages of education up.

I believe in aiming at both the general interest, enthusiasm, and inquiry, and the special information of expert investigators in long and strong courses of technical training. We must build the better agriculture from what we have. To reach the farmers with any applications of science, we must train the coming generations in the elements of science. The youths from the farms must find in our schools of agriculture the stimulant to scientific thoughtfulness that prepares them for better farming. Farmers can never be much benefited by ready-made information till a generation is trained to appreciate it. In fact, the schools can serve the farmers only through the youth.

A second fact stands patent. The results of research and experiment can be accepted and utilized by those only whose training has somehow fitted them for such appreciation and adaptation to present wants. No one has failed to discover how relative to present knowledge all added information is. In agriculture, especially, the judgment needed to adopt, and adapt to varying conditions, any improvement, depends upon previous familiarity with a multitude of relations. For the problems of agriculture are indefinitely varied; similarity rather than identity rules. Until, then, a mass of the youth come under the influence of the fitting process, the range of useful information must be limited, and restrained to the advantage of a few.

A third fact appears: That the moral and material support for thoroughly scientific inquiry can come from no other source than masses of men whose training suggests the need of advanced inquiry. The majority of untrained farmers ask for only the rough experiment that decides whether this or that seed will yield

most; whether this or that method of plowing or cultivation costs least for the crop secured; or, as one who signed himself "A Would-be Farmer," wrote me a few weeks since, "Can I feed pigs on corn so that at six months old they will weigh 300 pounds? If so, what breed of pigs on what kind of corn?" The actual underlying truths which make improvements possible they usually denounce as "fine-spun theories." Only as the leaven of youth awakened to the nature of science pervades the mass, can the means for higher investigations be secured. Experiment stations must be mere bureaus of ready-made information on the merest practical judgments, unless a truly scientific bias among farmers can be secured.

A fourth fact is beyond dispute: That the trained experts now willing and ready for these genuine investigations are largely the offspring of such elementary training. As I run over in mind the corps of able directors and assistants recently organized into the 39 experiment stations provided for by Congress, I am met by this fact in almost every one. With a few notable exceptions among the older men, the multitude have come from the few, relatively, who have had this early training, or something akin to it. Many of the leading authorities in agricultural and horticultural matters have had their interest awakened by early education in the few such schools. For I must admit that the majority of the 39 endowed colleges of agriculture and the mechanic arts have drifted with the tide into university departments or schools of technology. Yet the nation looks to the minority for its real leaders toward a more perfect agricultural knowledge.

Accepting these facts as a foundation of certainty, I have studied the problem of adjustment between a genuine education in no narrow spirit of exclusiveness and such a body of information and thought as must preserve the natural, normal interest in all that pertains to the farm and the development of farm industry. Without a taint of opposition to either the objects or the methods of the high classical training, I have watched the necessities of my problem with constantly-growing confidence in the solution which I try briefly to offer here. In my own mind the conviction is settled, that the true object to which all the forces of such an institution should tend is such discipline of body, mind and sympathies as shall give strength for the task of elevating agriculture, while the every-day surroundings add to the natural curiosity about seeds, soils, moisture, heat, germination and fertilization, variation in plant and animal, adaptation of parts and forces. In all of this there is abundant room for the truest discipline of perceptive powers, of judgment in all the phases of thought—comparison, abstraction, generalization, classification, and abstruse reasoning—and the most natural cultivation of memory and imagination. Above all, the true philanthropy that seeks each man's good in all men's good should pervade the whole with the widest intelligence of the world's wants always at hand. To be more explicit, the object is neither to make a set of trained hands for the farmer, not even to graduate farmers, if you please, nor to follow established rules of discipline which lead the bulk of thoughts and sympathies away from the farm, but to give genuine education in the humanities through those elements of knowledge which touch humanity most.

That such an object is definite enough to be distinctly gained, is proved by the work of several institutions of established fame, whose graduates are men of influence, showing their discipline in just such humanitarian efforts as we seek. Whether farmers, physicians, lawyers, editors, or even preachers, their thoughtful sympathies reach to such work.

To secure this object under the present conditions in most of the States, the following methods are commended, upon the test of experience, verified by extended observation:

First, Students must be able to reach the advantages of such an institution di-

rectly from their rural homes. Whatever preparatory training is needed must be given by the schools at home, if possible; if not, by the institution. Any required examination at admission must be suited to the methods of the rural schools, and in no way is even a seeming advantage to be given to a city grading system as a means of access. Of all things, any form of recognizing preparatory schools which cannot readily apply to the common district school breaks the continuity between the agricultural home and the agricultural college.

Second, The course of study must present essential discipline in lines of most direct interest. The mother-tongue stands first as the key to knowledge, the instrument of clear thought, and the medium of influence. If circumstances indicate that such training can be best given by comparison with another related language, living or dead, it may be used, but always subsidiary to the native language. In general with the common methods of teaching, attention to English in all its simplicity and complexity, its derivations, combinations and growths and associations, within itself will give better results within an ordinary four-years' course than can be given through any mere smattering of other tongues.

Of next importance, and coördinate in time, must be the discipline of perceptive and reasoning faculties through the science of nature, with abundant illustrations from the things which the students themselves have handled. Botany, chemistry, mineralogy, entomology, comparative anatomy, physiology, zoölogy and geology make a series so full of constant adaptations to previous curiosity as to give new zest to the problems of farm life. These applications may be wisely emphasized in special groups where information is given as to practical questions in raising and handling crops and domestic animals, trees, and garden vegetables, with the chemistry of growth and decay, provided these groups are carefully adjusted to the mastery of elementary sciences. Of equal importance in the discipline is a series of lessons in such intuitions as pure and applied mathematics afford, with sufficient introspection to arouse interest in the processes of thinking, feeling, and willing, as well as in the results. With these, and illustrative of their bearing upon human welfare, there must be enough of history, including geography, to show the tendencies of civilization, if not the complex forces promoting it, and the essential principles of national economy and government. The grand essentials in all this are two: The principles shall be truly scientific, as broad as all the facts; the illustrations and applications shall fit into the life of the farmers' sons and daughters who study them.

Third, All these studies should have awakened appetite for further research; but to cultivate this, outlines of study and investigation may be suggested, such as any careful student may follow. If these lead to a second degree, the incentive is stronger and the work more definite and original, therefore more practical as a part of real education. If, in these second, or post-graduate, courses, it is feasible to combine art with science and science with art, we have the best conditions possible for general advancement of agriculture by a truly trained body of workers all along the line.

Fourth, It seems to me essential to such a plan of education that every youth should have his interest in the details of farming kept alive by some responsibility in actual service. Much of these details can be made instructive—illustrative of principles in the art and related sciences; but if it should be only indirectly so, the care and attention required in a few hours each week of ordinary manual labor makes real the lessons in agriculture. Even the friction of such a requirement may be turned to advantage in exalting the importance of a host of details, out of which most interesting problems grow. Such work brings the student into direct contact with improved methods and means, as well as with questions under investigation.

arouses curiosity and develops ingenuity, without which all the information of the cyclopedias is useless on the farm or to the farmers. It stands in the relation of laboratory practice to the chemist.

Fifth, Special opportunities for the development of higher ideals, and better appreciation of the importance of a true agriculture, occur all through the course. The special courses of lectures show that it has a character—a body of principles. General lectures touch it on every side incidentally. Even strangers bear incidental testimony by their interest and enthusiasm. Societies, clubs and institutes find room for discussions of questions pertaining to prevailing practices and false notions. Science is not degraded but exalted by such association with actual, practical illustrations. With such surroundings, any student of fair abilities is fitted by both interest and training to share in the gatherings of farmers and horticulturists with influence.

But to accomplish all this there is required no mean equipment. Unity of purpose must be shown throughout, and unity in execution is equally essential. An essentially continuous board of control must maintain a settled policy, apparent in the whole equipment. Incongruities are as destructive here as in a theological seminary. Let me emphasize a few essentials by distinct enumeration:

First, The location must be a farm in so far as growing farm crops, orchards, vineyards and gardens make a prominent part of the every-day surroundings. If it can be so near a town as to preclude all need of dormitories and consequent abnormal excitement, the gain is evident. For the interest of towns-people in such a farm, with all its possible attractiveness, gives the students a pride in their college, while the worst of gregarious vices and untoward influences are escaped. Moreover, the need of a multitude of regulations which diminish manliness in students is not felt. With homes among the towns-people, home life retains its influence.

Second, The buildings should show their character as made for business. Class-rooms and chapel, library and reading-room, should be so adjusted to laboratories, shops, barns, greenhouses, as to express the combination of thought and labor, and the expectation that students may be called from one to the other as occasion offers. If all are so connected by a system of bells struck by an electric clock that all classes move in and out together, the unity is felt still more.

Third, Every science must vie with every other for the best of apparatus, especially in the lines of investigation and research. The liberal provision for the botanist, chemist, physicist, draftsman and zoölogist must stand beside an equally liberal supply in shop and barn. But they must all be tools, not mere curiosities.

Fourth, The live-stock of the farm must serve the purpose of the farm as a school. It must illustrate the breeds and the principles of breeding, and show that it has that purpose. While the idea of profit and loss can never be separated from good farming, it must here be confined to the handling of a given group of stock, or the manipulation of certain crops. To manage a school for profit would be to forget the object of the school; and such a farm is as truly to be managed for instruction's sake as a chemical laboratory. Economical provision for instruction is the only profit to be thought of.

Fifth, The working cabinets in all of the special sciences must be of the best; but their purpose, too, should appear. The great museum of every conceivable curiosity may serve a useful purpose as a stimulant, but it is also distracting. It, at times, serves for a place of harmless dissipation. The unity of a working cabinet stimulates to thought and entices a student to definite inquiry.

Sixth, Such a school needs a more stable and carefully selected faculty than an ordinary college. With the definite idea of applied science in a school, more instructors are needed; and where one general purpose is to be served the unity of growth

is essential. Such a body of trained workers must have ways of sympathizing with and testing each other's work. Jealousies, if they arise, must be subordinated to the common interest by common responsibilities. The faculty, as a body, must control through their president, not the president over the faculty; for the voice of the least member must be heard for the whole. In this way unity in real interests may be maintained, and a symmetrical growth reached.

Seventh, and Last, Some vital connection with the world of workers on the farms of the State is essential. It must be apparent always that the usefulness of the college to the farming community is of chief importance. Its board of control must be representative men of the class to appreciate the needs and the work. The members of the faculty must be able to show their interest in the same work by meeting the farmers' questions upon their own ground. Farmers' institutes, where farmers and professors may "talk back" to each other in mutual interest, serve the purpose far better than elaborate courses of lectures from a platform controlled by the professors. Yet, beyond the possibility of such work, which, in the nature of the case, must be limited, the college must be a source of general information upon the topics most vital to successful farming. If occasional bulletins will answer such a purpose, let them be provided for, and let the stated reports be full and explicit from all departments of the work. In my own experience, a weekly issue of the college paper, edited by the faculty, and recording every item of growth or interest, has proved of inestimable advantage as a means of communication with patrons and the press of the State. Published at a moderate price to subscribers generally, it is sent free of charge to the parents of all students and to all newspapers, most of which recognize the courtesy by exchange. This has proven the cheapest and the best means yet devised of advertising in the right place, while it keeps the faculty as editors alive to the needs of the people whom they serve.

A glance backward over the requisites named will show that all this provides a general rather than a technical education, but such a one as will best fit for such technical training as our purpose indicates, while one who stops short of the completion of a course has gained in the very line of his best growth on the farm. In such a course, the sons of farmers and mechanics can work side by side to the advantage of both. With a slight variation in illustrative applications, the daughters, too, may have equal education in sympathy with the work of life. With 500 such students, an institution of this kind becomes a power among the people.

IX.

CHRONOLOGICAL TABLES.—BOARD OF REGENTS.—SECRETARIES, TREASURERS, LAND AGENTS, AND LOAN COMMISSIONERS.—FACULTY AND FACULTY OFFICERS.—SUPERINTENDENTS, INSTRUCTORS, FOREMEN, LIBRARIANS, PREPARATORY TEACHERS, LECTURERS.—ANNUAL ADDRESSES.

BOARD OF REGENTS, 1863 TO 1893.

1863	Hon. G. W. Collamore,	1863
1863	Hon. D. P. Lowe, Fort Scott,	1864
1863	Hon. A. Spaulding,	1864
1863	Hon. W. F. Woodworth,	1866
1863	Judge J. Pipher, Manhattan,	1868
1863	Judge L. D. Bailey, Garden City,	1869
1863	Hon. S. D. Houston, Concordia,	1869
1863	Rev. J. G. Reaser,	1869
1863	Hon. T. H. Baker,	1870
1863	Rev. R. Cordley, Lawrence,	1871
1863	Hon. Thos. Carney, Governor of State, <i>ex officio</i> , (deceased,)	1865
1863	Hon. W. H. H. Lawrence, Secretary of State, <i>ex officio</i> ,	1865
1863	Hon. I. T. Goodnow, State Superintendent of Public Instruction, <i>ex officio</i> , Manhattan,	1867
1863	Rev. J. Denison, President of the College, <i>ex officio</i> ,	1873
1865	Rev. E. Gale, Lake Worth, Florida,	1871
1865	Rev. D. Earhart, Atchison,	1871
1865	Hon. S. J. Crawford, Governor of State, <i>ex officio</i> , Topeka,	1868
1865	Hon. R. A. Barker, Secretary of State, <i>ex officio</i> ,	1869
1867	Rev. P. McVicar, State Superintendent of Public Instruction, <i>ex officio</i> Topeka,	1871
1868	Hon. E. C. Manning, Winfield,	1870
1868	Rev. Charles Reynolds, (deceased,)	1874
1868	Hon. N. Green, Governor of State, <i>ex officio</i> , (deceased,)	1869
1869	Hon. B. J. F. Hanna, Salina,	1873
1869	Hon. John McClenahan, Ottawa,	1873
1869	Hon. O. J. Grover, Savannah,	1873
1869	Hon. J. M. Harvey, Governor of State, <i>ex officio</i> , Riley,	1873
1869	Hon. Thomas Moonlight, Secretary of State, <i>ex officio</i> , Leavenworth,	1871
1870	Rev. R. D. Parker, Manhattan,	1873
1870	Hon. H. J. Strickler, (deceased,)	1873
1870	Hon. Alfred Gray, (deceased,)	1873
1870	Hon. Geo. W. Higinbotham, Manhattan,	1873
1871	Rev. L. Sternberg, Fort Harker,	1873
1871	Hon. Joshua Wheeler, Nortonville,	1873
1871	Hon. Thos. A. Osborn, Governor of State, <i>ex officio</i> , Topeka,	1873
1871	Hon. W. H. Smallwood, Secretary of State, <i>ex officio</i> ,	1873
1871	Hon. H. D. McCarty, State Superintendent of Public Instruction, <i>ex officio</i> , (deceased,)	1873

1873	Hon. N. Green, (deceased),	1874
1873	Hon. J. K. Hudson, Topeka,	1875
1873	Hon. Josiah Copley, Junction City,	1875
1873	Hon. James Rogers, Burlingame, (deceased,)	1876
1873	Hon. N. A. Adams, Manhattan,	1878
1873	Rev. Jno. A. Anderson, President of the College, <i>ex officio</i> , Manhattan, (deceased,)	1879
1874	Hon. Charles E. Bates, Marysville,	1874
1874	Hon. J. H. Folks, Wellington,	1877
1874	Hon. B. L. Kingsbury, Burlington,	1879
1875	Hon. M. J. Salter, Thayer,	1877
1876	Rev. J. Lawrence, Manhattan,	1878
1876	Hon. A. H. Horton, Topeka,	1877
1877	Hon. J. R. Hallowell, Wichita,	1879
1877	Hon. T. C. Henry, Denver, Colo.,	1880
1877	Hon. Stephen M. Wood, Elmdale,	1883
1878	Hon. L. J. Best, Beloit,	1878
1878	Hon. W. L. Challiss, Atchison,	1881
1879	Hon. E. B. Purcell, Manhattan,	1881
1879	Hon. D. C. McKay, Ames, (deceased,)	1883
1879	Hon. A. L. Redden, El Dorado,	1883
1879	Rev. Geo. T. Fairchild, President of the College, <i>ex officio</i> ,	—
1880	Hon. A. J. Hoisington, Kansas City, Mo.,	1883
1881	Hon. John Elliot, Manhattan,	1883
1881	Hon. V. V. Adamson, Holton,	1883
1883	Hon. F. D. Coburn, Kansas City, Kas.,	1885
1883	Hon. H. C. Kellerman, Burlington,	1885
1883	Rev. Philip Krohn, Atchison,	1885
1883	Hon. C. E. Gifford, Clay Centre,	1885
1883	Hon. C. A. Leland, El Dorado,	1886
1883	Hon. J. T. Ellicott, Kansas City, Mo.,	1886
1885	Hon. Thos. Henshall, Kansas City, Kas.,	1890
1885	Hon. T. P. Moore, Holton,	—
1885	Hon. A. B. Lemmon, Santa Rosa, Cal.,	1888
1885	Hon. A. P. Forsyth, Liberty,	—
1886	Hon. Jno. E. Hessin, Manhattan,	1892
1886	Hon. J. H. Fullinwider, El Dorado,	1887
1887	Hon. E. N. Smith, El Dorado,	1889
1888	Hon. Joshua Wheeler, Nortonville,	—
1889	Hon. Morgan Caraway, Great Bend,	1892
1890	Hon. R. W. Finley, Oberlin,	—
1892	Hon. F. M. Chaffee, Wyckoff,	—
1892	Hon. R. P. Kelley, Eureka,	—

SECRETARIES OF THE BOARD.

1863	Regent T. H. Baker,	1870
1870	Regent R. D. Parker,	1873
1873	Prof. E. Gale,	1873
1873	Wm. Burgoyne,	1874
1874	Regent N. A. Adams,	1878
1878	Pres. Jno. A. Anderson,	1879
1879	Regent T. C. Henry,	1879

1879	Pres. Geo. T. Fairchild,	—
1884	I. D. Graham, (Assistant,)	—

TREASURERS OF THE BOARD.

1863	J. Pipher,	1870
1870	E. B. Purcell,	1882
1882	D. C. McKay,	1883
1883	J. T. Ellicott,	1886
1886	Jno. E. Hessin,	1892
1892	Joshua Wheeler,	—

LAND AGENTS.

1866	I. T. Goodnow,	1873
1873	L. R. Elliott,	1883
1883	J. B. Gifford,	1889

LOAN COMMISSIONERS.

1870	E. Gale,	1878
1878	M. L. Ward,	1883
1883	J. T. Ellicott,	1886
1886	T. P. Moore,	1889
1889	Jno. E. Hessin,	1890
1890	T. P. Moore,	—

FACULTY, 1863 TO 1893.

PRESIDENTS.

1863	Joseph Denison,	1873
1873	John A. Anderson,	1879
1879	George T. Fairchild,	—

SECRETARIES.

1864	J. E. Platt,	1871
1871	Mrs. Lizzie J. Williams <i>Champney</i> ,	1873
1873	J. E. Platt,	1881
1881	I. D. Graham,	—

PROFESSORS.

1863	Joseph Denison, '63-'66, Ancient Languages, and Mental and Moral Science; '66-'69, Mental and Moral Science, and the Greek Language; '69-'70, Mental and Moral Science, and Political Economy; '70-'73, History, Political Economy, and Mental and Moral Philosophy,	1873
1863	J. G. Schnebly, Natural History, and Lecturer on Agricultural Chemistry,	1865
1863	N. O. Preston, Mathematics, and English Literature, (deceased,)	1866
1864	C. Hubschman, Instrumental Music, (deceased,)	1866
1865	B. F. Mudge, '65-'70, Natural Science and Higher Mathematics; '70-'74, Natural Sciences, (deceased,)	1874
1866	Gen. J. H. Davidson, '66-'68, Military Science and Tactics; '68-'69, Military Science and Tactics, and Teacher of French and Spanish; '69-'70, Military Science and Tactics and Civil Engineering, and Teacher of French and Spanish, (deceased,)	1870

1866	J. H. Lee, '66-'69, Latin Language and Literature; '69-'70, Latin and Greek Languages and Literature; '70-'71, Agricultural Classics; '71-'74, Latin and English Literature; '74-'75, English and History,	1875
1866	J. W. Hougham, '66-'69, Agricultural Science; '69-'70, Agricultural and Commercial Science; '70-'72, Agricultural Chemistry, Mechanic Arts, and Commercial Science,	1872
1866	J. E. Platt, '66-'74, Mathematics and Vocal Music; '74-'83, Elementary English and Mathematics,	1883
1869	Miss Mary F. Hovey, '69-'70, German Language and Literature; '70-'72, German Language and English Literature,	1872
1870	Fred. E. Miller, Practical Agriculture,	1874
1870	E. Gale, '70-'75, Horticulture ('70-'71, Instructor); '75-'78, Botany and Practical Horticulture,	1878
1872	H. J. Detmers, Veterinary Science and Animal Husbandry,	1874
1873	M. L. Ward, '73-'75, Mathematics; '75-'82, Mathematics and English; '82-'83, Mathematics and Engineering,	1883
1874	Wm. K. Kedzie, Chemistry and Physics,	1878
1874	E. M. Shelton, '74-'82, Practical Agriculture; '82-'89, Agriculture,	1889
1874	J. S. Whitman, Botany, Entomology, and Geology,	1876
1877	John D. Walters, '77-'85, Instructor in Industrial Drawing; '85-, Industrial Art and Designing,	—
1878	George H. Failyer, '78-'85, Chemistry and Physics; '85-, Chemistry and Mineralogy,	—
1878	H. E. Van Deman, Botany and Horticulture,	1879
1878	Wm. L. Hofer, Music,	1886
1879	Edwin A. Popenoe, '79-'80, Botany and Horticulture; '80-'83, Botany and Zoölogy; '83-, Horticulture and Entomology,	—
1879	George T. Fairchild, '79-'80, Political Economy; '80-, Logic and Political Economy,	—
1881	Lieut. Albert Todd, Military Science and Tactics,	1884
1882	Mrs. N. S. Kedzie, Household Economy and Hygiene ('82-'87, Instructor),	—
1882	W. H. Cowles, English and History ('82-'84, Instructor),	1885
1883	William A. Kellerman, '83-'87, Botany and Zoölogy; '87-'91, Botany,	1891
1883	David E. Lantz, Mathematics,	—
1883	B. F. Nihart, '83-'85, Mechanics and Engineering; '85-'86, Instructor in Book-keeping,	1886
1884	Lieut. W. J. Nicholson, Military Science and Tactics,	1887
1885	Elias B. Cowgill, Mechanics, Physics, and Engineering ('85-'86, Instructor),	1887
1885	Oscar E. Olin, '85-'88, English and History ('85-'86, Instructor); '88-, English Language and Literature,	—
1886	Alexander B. Brown, Music,	—
1887	Ozni P. Hood, Mechanics and Engineering ('87-'89, Instructor),	—
1887	Lieut. John F. Morrison, Military Science and Tactics,	1890
1888	Robert F. Burleigh, Physiology and Veterinary Science,	1889
1888	Francis H. White, History and Constitutional Law ('88-'89, Instructor),	—
1890	Charles C. Georgeson, Agriculture,	—
1890	Captain Edwin B. Bolton, Military Science and Tactics,	—
1890	Ernest R. Nichols, Physics,	—
1890	Nelson S. Mayo, Physiology and Veterinary Science,	—

1891	Julius T. Willard, Assistant Professor of Chemistry ('83-'91, Laboratory Assistant),	—
1891	Albert S. Hitchcock, Botany,	—
1892	Silas C. Mason, Assistant Professor of Horticulture ('88-'92, foreman of Gardens and Orchards),	—

SUPERINTENDENTS.

Farm.

1870	Fred. E. Miller,	1874
1874	Edward M. Shelton,	1889
1889	Charles C. Georgeson,	—

Gardens, Orchards, etc.

1870	E. Gale,	1878
1878	H. E. Van Deman,	1879
1879	Edwin A. Popenoe,	—

Shops.

1871	Ambrose Todd (deceased),	1878
1878	T. T. Hawkes,	1882
1882	M. A. Reeve (acting),	1883
1883	T. T. Hawkes,	1886
1886	O. P. Hood,	—

Printing.

1874	A. A. Stewart,	1881
1881	Geo. F. Thompson (acting, '81-'82),	1887
1887	John S. C. Thompson,	—

Telegraphy.

1873	Frank C. Jackson,	1874
1874	Walter C. Stewart,	1879
1879	I. D. Graham,	1891
1891	Department abolished.	

Sewing.

1874	Mrs. H. C. Cheseldine,	1875
1875	Mrs. M. E. Cripps,	1882
1882	Mrs. N. S. Kedzie,	1884
1884	Mrs. E. E. Winchip,	—

INSTRUCTORS.

1863	Mrs. Ella C. Beckwith, Instrumental Music,	1864
1866	Mrs. Laura C. Lee, Instrumental Music,	1868
1868	Miss Emily M. Campbell, Instrumental Music,	1869
1869	Mrs. Hattie V. Werden, Instrumental Music,	1877
1870	Mrs. Lizzie J. Williams <i>Champany</i> , Drawing,	1876
1872	Miss Jennie Detmers, Chemistry and German,	1873
1875	Mrs. M. E. Cripps, Household Economy,	1882
1875	Mrs. M. L. Ward, French and German,	1876
1876	Mrs. Ella M. Kedzie, Drawing,	1877
1876	Harry F. McFarland, Meteorology,	1876
1877	Miss Carrie Steele, Instrumental Music,	1878
1886	Ira D. Graham, Book-keeping and Commercial Law,	—

1887	Frederick J. Rogers,	1889
1891	James W. Rain, English Language,	1892
1892	Miss Josie C. Harper, Mathematics,	—
1892	Miss Alice Rupp, English,	—

FOREMEN.

Farm.

1872	J. C. Mayos,	1875
1875	T. B. Morgan,	1882
1882	W. S. Myers,	1883
1883	E. Gregory,	1883
1883	W. Whitney,	1886
1886	George R. Wilson,	1887
1887	W. Shelton,	1893

Gardens, Orchards, etc.

1881	A. Winder,	1883
1883	G. E. Hopper,	1887
1883	W. Baxter (greenhouse),	—
1887	C. L. Marlatt,	1888
1892	F. C. Sears,	—

Blacksmith Shop.

1878	S. A. Hayes,	1879
1879	J. Linder (student, acting),	1883
1883	J. Lund,	1886
1886	Charles A. Gundaker,	1891
1891	Blacksmith shop transformed into workshop in iron.	

Workshop in Wood.

1887	Geo. N. Thompson,	1888
1888	William L. House,	—

Workshop in Iron.

1891	E. Harrold,	—
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LIBRARIANS.

1867	J. H. Lee,	1869
1869	J. S. Hougham,	1871
1871	J. H. Lee,	1873
1873	J. S. Whitman,	1875
1875	M. L. Ward,	1882
1882	W. H. Cowles,	1885
1885	B. F. Nihart,	1886
1886	D. E. Lantz,	—

PREPARATORY DEPARTMENT.

1864	J. E. Platt, Principal,	1866
1864	Miss Belle M. Haines, Assistant,	1864

LECTURERS.

Dr. John A. Warder, Horticulture and Pomology,	1871
Joseph Rushman, Veterinary Science,	1871
Charles V. Riley, Economic Entomology,	1876

D. J. Brewer, Practical Law,	1875-77
Dr. Paul Pagnin, Veterinary Science,	1887

ANNUAL ADDRESSES.

John J. Ingalls, Atchison,	1873
T. Dwight Thacher, Lawrence,	1874
Noble L. Prentiss, Atchison,	1875
J. K. Hudson, Topeka,	1876
J. R. Hollowell, Columbus,	1878
S. O. Thacher, Lawrence,	1880
S. S. Benedict, Guilford,	1881
James Humphrey, Junction City,	1883
George R. Peck, Topeka,	1884
Rev. A. D. Mayo, Boston, Mass.,	1885
T. Dwight Thacher, Topeka,	1886
Edwin Willits, Lansing, Mich.,	1887
H. A. Burrill, Washington, Iowa,	1888
N. C. McFarland, Topeka,	1889
E. E. White, Cincinnati, Ohio,	1890
J. M. Greenwood, Kansas City, Mo.,	1891
C. G. Luce, Coldwater, Mich.,	1892

ASSISTANTS IN EXPERIMENT STATION.

1888	Henry M. Cottrell, Agriculture,	1892
1888	Charles L. Marlatt, Horticulture,	1889
1888	Walter T. Swingle, Botany,	1891
1888	Silas C. Mason, Horticulture,	—
1888	Julius T. Willard, Chemistry,	—
1889	Fredric A. Marlatt, Entomology,	—
1891	Emma Allen (deceased), Botany,	1891
1892	M. A. Carleton, Botany,	—
1892	F. C. Burtis, Agriculture,	—



KANSAS STATE AGRICULTURAL COLLEGE. (General View.)

NINTH BIENNIAL REPORT

OF THE

BOARD OF REGENTS AND FACULTY

OF THE

STATE AGRICULTURAL COLLEGE,

LOCATED AT

MANHATTAN, KANSAS.

1893-'94.

MANHATTAN.

1895.

BOARD OF REGENTS.

HON. W. D. STREET (1896)*, *President*,
Oberlin, Decatur county.

HON. HARRISON KELLEY (1896), *Vice President*.
Burlington, Coffey county.

HON. ED. SECREST (1895), *Treasurer*.
Randolph, Riley county.

HON. E. D. STRATFORD (1895), *Loan Commissioner*.
El Dorado, Butler county.

HON. C. B. HOFFMAN (1897),
Enterprise, Dickinson county.

HON. C. E. GOODYEAR (1897),
Wichita, Sedgwick county.

PRES. GEO. T. FAIRCHILD (*ex officio*), *Secretary*.

I. D. GRAHAM, *Assistant Secretary*.
Manhattan.

* Term expires.

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KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KAS., December 14, 1894.

To His Excellency L. D. Lewelling, Governor:

DEAR SIR—I transmit herewith, under the laws of the state, the ninth biennial report of the Board of Regents of the Kansas State Agricultural College, including the reports of the president, professors, and other officers, for the two years ending June 30, 1894.

Respectfully yours,

GEO. T. FAIRCHILD,

Secretary Board of Regents.

REPORT OF THE BOARD OF REGENTS.

To His Excellency L. D. Lewelling, Governor of Kansas:

SIR—The board of regents of the Kansas State Agricultural College respectfully submit, as required by law, this biennial report for the two years ending June 30, 1894, and append thereto full financial statements and reports of the various officers of the college.

The general prosperity of the institution is shown by its improved equipment, enlarged corps of instructors, good attendance of students, especially in the advanced classes, revised course of study, and the general good will of all parties conversant with its work and growth.

The equipment has been improved, especially along the lines of agriculture and the mechanic arts, the fund furnished by act of Congress approved August 30, 1890, having made such improvement possible. As none of this could be used for buildings, these improvements have been in apparatus and machinery, chief among which are a series of propagating pits, engine, dynamos, and tools for shops, barn, and printing office, collections in museums, and important additions to the library. So essential have these equipments seemed, that the income of the college has been found too meager to meet all the necessities.

But a single change has occurred in the faculty of tried professors. At the close of the college year, Prof. Ernest R. Nichols (whose work in physics was highly esteemed by the board) voluntarily severed his connection with the institution, to continue his studies. As an evidence of regard for Professor Nichols, the withdrawal was made to stand as a leave of absence for one year, and it has thus appeared on the published faculty roster. His duties are provided for by assigning them to other professors. A few additions, however, have been deemed necessary in order to better distribute the work and give greater personal attention to the advanced classes.

It has also been deemed advisable to strengthen and give larger scope to the study of the laws of the distribution of wealth; in short, to social and political economy. For this purpose Prof. Thos. E. Will, A. M., was called to fill the chair of political economy.

After three and a half years of service here, Captain Bolton asked for relief from the chair of military science and tactics, and was succeeded March 1, 1894, by Capt. H. G. Cavanaugh, of the thirteenth United States infantry. Miss Josephine C. Harper, instructor in mathematics, and Miss Alice Rupp, instructor in English, entered upon their work September 1, 1892, and have been reappointed from year to year. Mr. Howard M.

Jones, A. B., appointed instructor in rhetorical exercises for the college year 1893-'94, is reappointed for the next year. Mr. S. C. Mason, assistant professor in horticulture, is promoted to a full professorship, from September 1, 1894, Professor Popenoe being given the professorship of entomology and zoölogy, instead of horticulture and entomology. Miss Julia R. Pearce, B. Sc., has been appointed librarian, with a seat in the faculty, having been assistant librarian for the past two years. Other changes among employés have been confined to subordinate places. William Shelton, foreman of the farm for six years, left in February, 1893, to take charge of a large dairy farm near Boston, Mass., and is succeeded by Mr. L. A. McKeen. Mr. E. Harold, foreman of iron shops, has just gone into business for himself, and his place is taken by Mr. H. K. Brooks. Miss Bessie B. Little, assistant in sewing, is succeeded by Miss Laura G. Day, B. Sc.

In the station force, Mr. D. H. Otis, B. Sc., has been second assistant in agriculture since February, 1893. Mr. J. B. S. Norton, in March, 1894, succeeded Mr. M. A. Carleton, M. Sc., called to the United States department at Washington. Mr. F. W. Dunn, B. Sc., was made assistant in irrigation April, 1894; and Mr. F. C. Sears, B. Sc., succeeds Professor Mason as assistant in horticulture after September 1, 1894. Mr. Jacob Lund, M. Sc., has just been made fireman and steam fitter, to enter upon duty September 1, 1894.

The full corps of officers is given below, with a statement of the salary received by each, and the funds from which it is drawn:

BOARD OF INSTRUCTION.	From station fund.	From annual fund.	From income fund.	Total.
George T. Fairchild, LL. D., ¹ president, professor of logic and philosophy	\$300		\$2,700	\$3,000
George H. Failyer, M. Sc., professor of chemistry and mineralogy	800	\$1,200		2,000
Edwin A. Popenoe, A. M., professor of entomology and zoölogy, David E. Lantz, M. Sc., professor of mathematics	800	1,200		2,000
John D. Walters, M. Sc., professor of industrial art and designing		1,600		1,600
Ira D. Graham, A. M., secretary, instructor in bookkeeping ..	400	1,600		1,600
Oscar E. Olin, professor of English language and literature ..			1,000	1,400
Mrs. Nellie S. Kedzie, M. Sc., professor of household economy and hygiene			1,000	1,000
Mrs. Elida E. Winchip, superintendent of sewing			1,000	1,000
Ozni P. Hood, B. Sc., professor of mechanics and engineering, superintendent of workshops		1,600		1,600
Alexander B. Brown, A. M., professor of music			1,200	1,200
John S. C. Thompson, superintendent of printing			1,200	1,200
Francis H. White, A. M., professor of history and political science			1,600	1,600
Charles C. Georgeson, M. Sc., ¹ professor of agriculture, superintendent of farm	1,200	800		2,000
Ernest R. Nichols, A. M., ² professor of physics	900	700		1,600
Nelson S. Mayo, D. V. S., M. Sc., professor of physiology and veterinary science	700	700		1,400
Julius T. Willard, M. Sc., assistant professor of chemistry ..	900	900		1,800
Albert S. Hitchcock, M. Sc., professor of botany				
Silas C. Mason, M. Sc., professor of horticulture, superintendent of orchards and gardens	180	1,220		1,400
Miss Josephine C. Harper, instructor in mathematics			1,000	1,000
Miss Alice Rupp, instructor in English			1,000	1,000
Howard M. Jones, A. B., rhetorical instructor			1,000	1,000
Harry G. Cavenaugh, captain 15th United States Infantry, ³ professor of military science and tactics				
Thomas E. Will, A. M., professor of political economy		1,600		1,600
Miss Julia R. Pearce, librarian			600	600

BOARD OF INSTRUCTION.	From station fund.	From annual fund.	From income fund.	Total.
ASSISTANTS AND FOREMAN.				
C. M. Breese, M. Sc., assistant in chemistry		1,000		1,000
Grace M. Clark, stenographer in executive office			420	420
Laura G. Day, B. Sc., assistant in sewing (nine months)			270	270
William Baxter, foreman of greenhouse			800	800
W. L. House, foreman of carpenter shop		800		800
H. K. Brooks, foreman of iron shop		800		800
L. A. McKeen, foreman of farm		600		600
C. A. Gundaker, engineer			720	720
A. C. McCreary, janitor			800	800
Jacob Lund, M. Sc., fireman and steam fitter			600	600
ASSISTANTS IN EXPERIMENT STATION.				
F. A. Marlatt, B. Sc., entomology	720			720
F. C. Burtis, M. Sc., agriculture	720			720
D. H. Otis, B. Sc., agriculture	600			600
F. C. Sears, B. Sc., horticulture	720			720
J. B. S. Norton, botany (when giving full time)	480			480
F. W. Dunn, B. Sc., irrigation	900			900
Totals	\$10,320	\$18,920	\$16,110	\$45,350

¹ With house.

² On leave of absence for one year, without salary.

³ On detail from United States war department.

The attendance of students shows 30 less for the last year than in the previous year, due to the prevailing financial depression caused by the policy of dominant political parties; but the classes above the first year have been larger than ever before. This shows not only an increased interest in a course of study, but also attachment of the students to their college. Especially does the attendance of graduates indicate a growing interest in the advanced work of the college.

THE COURSE OF STUDY.

The course of study has been strengthened by the addition of a term in elementary physics for the first year, a term in descriptive geometry for the second year, a term of sketching and a half term of history of industries for the fourth year, and a general course of lectures in political economy for all classes. A slight rearrangement of other studies in the course has, in some respects, improved the general effect of the succession. Military drill is required in the first two years. The course now stands as follows (numerals denote the number of class hours per week):

FIRST YEAR.

Fall Term, 14 weeks. Algebra, 5.

Botany, 5.

English analysis, 5.

Free-hand drawing, 3.

Rhetoricals, 1.

Industrial, 5.

Military drill, 4.

Winter Term, 12 weeks... Algebra, 5.

English composition, 5.

Bookkeeping, half term, 5.

Commercial law, 1.

Geometrical drawing, half term, 5.

Rhetoricals, 1.

Industrial, 5.

Military drill, 3.

Spring Term, 11 weeks... Algebra, 5.

English structure, 5.

Elementary physics, 5.

Rhetoricals, 1.

Industrial, 5.

Military drill, 5.

SECOND YEAR.

Fall Term, 14 weeks..... Geometry, 5.

Horticulture, 5.

Inorganic chemistry, 5; laboratory work, 2.

Rhetoricals, 1.

Industrial, 5.

Military drill, 4.

Winter Term, 12 weeks... Geometry, half term, 5.

Projection drawing, half term, 5.

Agriculture, for young men, 5.

Household economy, for young women, 5.

Organic chemistry, half term, 5.

Mineralogy, half term, 5; laboratory work, 5.

Military science, half term, 2.

Rhetoricals, 1.

Industrial, 5.

Military drill, 2.

Spring Term, 11 weeks... Descriptive geometry, 5.

Entomology, 5.

Analytical chemistry, 10.

Military science, 2.

Rhetoricals, 1.

Industrial, 5.

Military drill, 5.

THIRD YEAR.

Fall Term, 14 weeks..... Trigonometry and surveying, 5; surveying practice, 2.

General history, 5.

Anatomy and physiology, 10 weeks, 5.

Chemistry of foods, 4 weeks, 5.

Rhetoricals, 1.

Industrial, 5.

Military drill, optional.

Winter Term, 12 weeks... Mechanics, 5.

Civics, 5.

Zoölogy, 5.

Map drawing, about 30 hours a term.

Rhetoricals, 1.

Industrial, 5.

Military drill, optional.

Spring Term, 11 weeks . . . Geology, 5.
 Rhetoric, 5.
 Agricultural chemistry, 5.
 Perspective and sketching, 4.
 Rhetoricals, 1.
 Industrial, 5.
 Military drill, optional.

FOURTH YEAR.

Fall Term, 14 weeks Physics and meteorology, 5.
 English literature, 5.
 Agriculture, for young men, 5.
 Hygiene, for young women, 5.
 Object drawing, 4.
 Rhetoricals, 1.
 Industrial, 5.
 Military drill, optional.

Winter Term, 12 weeks . . . Physics, half term, 5.
 History of industry and science, half term, 5.
 Psychology, 5.
 Botany, 5.
 Veterinary science, for young men, 5.
 Floriculture, for young women, 5.
 Rhetoricals, 1.
 Industrial, 5.
 Military drill, optional.

Spring Term, 11 weeks . . . Political economy, 5.
 Logic, 5.
 Engineering, for young men, 5.
 Literature, for young women, 5.
 Rhetoricals, 1.
 Industrial, 5.
 Military drill, optional.

FARMERS' COURSES.

The college has continued during the past two years the series of farmers' institutes begun in 1881, having sent lecturers to some 30 different institutes in as many different counties. These have been for the most part well attended, and are considered an important part of the college work for the state at large. At the same time, the duties of the professors as college instructors prevent so wide an extension of these institutes as the state needs, and the incidental expenses of holding them at a distance from the college are greater than the college can afford.

During the past two years the college has given for the benefit of farmers a two-weeks course of 36 lectures upon topics directly connected with agriculture, horticulture, and country homes. The interest in this course has not been great, but it is proposed to continue it, with the hope that farmers and their wives from various parts of the state will avail themselves of its privileges.

Your board of regents, in coming in contact with the sons and daughters

of the farmers of the state, who constitute a large portion of the students, have realized more than ever that it is not a lack of industry or unfavorable methods of farming or the unfavorableness of climate which have caused the widespread and steadily-increasing poverty among the agricultural and laboring classes.

The unremitting toil of the farmer, in which sons and daughters take part even during childhood, has indeed yielded him large quantities of grain, great numbers of cattle, hogs, horses, and other domestic animals. He has produced enough of the useful and necessary things of life that, with fair equitable exchange, would bring prosperity in place of poverty, comfort in place of benumbing drudgery, and content and patriotism in place of unrest and dissatisfaction.

It is hoped that giving more attention to the study of the economic principles which govern the distribution of wealth will stimulate a healthy inquiry among the people into the causes that depress industry and paralyze agriculture. With this purpose in view, the board of regents has instituted the general course of lectures on political economy, already referred to, and has ranked the study of political economy in the postgraduate course, commensurate with its importance.

COLLEGE FUNDS.

The endowment fund now amounts to \$501,632.35, with 160 acres of land returned upon forfeiture of contract. This land should be sold; but to appoint a land agent for the purpose will require the giving of a bond for \$40,000, with almost no compensation. We recommend that the secretary of the board of regents be authorized, in absence of a land agent, to act *ex officio* in that capacity, and to report to the auditor of state as required by law. The \$501,632.35 of the endowment fund is held in the state treasury, invested as follows, June 30, 1894:

School bonds, 10 per cent.....	\$100 00
School bonds, 7 per cent.....	20,444 50
School bonds, 6 per cent.....	182,414 05
School bonds, 5 per cent.....	700 00
Municipal bonds, 7 per cent.....	2,200 00
Municipal bonds, 6 per cent.....	284,395 00
Notes and contracts, 10 per cent.....	3,394 47
Notes and contracts, 8 per cent.....	1,500 00
Notes and contracts, 7 per cent.....	1,400 00
Cash awaiting investment.....	5,084 33
Total.....	\$501,632 35

Upon this fund the state has guaranteed an interest of at least 5 per cent. By care and energy the average interest earned has so far been kept about 6 per cent., but in future good securities at similar rates are likely to be difficult to obtain. But for the fact that during the money stress of 1893 Kansas securities were offered freely, the fund must already have been largely invested in 5-per-cent. bonds. In the near future authority must be given to look

elsewhere than to Kansas municipal bonds for safe and profitable investment of the fund.

THE ANNUAL INCOME

Derived from interest on the endowment has been gradually reduced by falling rates of interest. The payments under the act of Congress approved August 30, 1890, have, however, increased each year by \$1,000. The annual appropriation by Congress for the experiment station has been continued. The sales of products from farm, garden and shops have added something. The totals for the separate years have been as follows:

	1892-'93.	1893-'94.
From interest on endowment	\$30,184 04	\$29,760 88
From annual payment, act of 1890.....	18,000 00	19,000 00
From annual appropriation, station, act of 1887.....	15,000 00	15,000 00
From sales, etc.....	8,641 00	6,104 00
Totals.....	\$71,845 04	\$69,868 32

As the state has made no provision for the growth of apparatus and library with the increased wants of more advanced students, this income has been drawn upon seriously for such necessities. The iron shop, the power plant and the propagating pits have all been equipped from this fund, and all increase in the library and scientific apparatus for four years past has been at its expense. These facts account for the condition of the treasury at the close of the financial year, showing that the semiannual interest due July 1 has been anticipated by several thousand dollars. The board have sought the strictest economy in current expenditures, and the faculty have seconded this purpose by efforts along the same line. It has not seemed possible to reduce the force while the work has been increasing, nor to reduce salaries already below the average in similar institutions. It seems necessary that the state should recognize responsibility for growth of equipment, as well as for necessary buildings.

APPROPRIATIONS FOR 1892-'94.

The legislature of 1891 made but slight provision for growth in the College during the year 1892-'93, making appropriations only for the care of funds, \$200; the water supply, \$500; the library periodicals, \$250, and current repairs, \$1,000. The legislature of 1893 was generous in providing for the construction of a long-needed addition for library, museum, class room, laboratory, and society uses in one building—the library and agricultural science hall—at an expense of \$60,000, and for a central steam plant and power house, \$14,000, with annual provision for the loan commissioner, \$300; water supply, \$500; general repairs, \$1,000; and for incidental expenses in care of funds, 1891-'95, \$500.

The building and the steam plant have been constructed under the direction of the state board of public works, being nearly ready to be turned over to the board at the expiration of the year. Although these structures are well fitted for their purposes, and will be a permanent credit to the state, it is nec-

essary to notice that neither could be completed, in necessary accompaniments, with the appropriation made, and both will need additional expenditure to fully meet their design. While this board has no criticisms to make, it is evident that a direct interest in the object of these buildings, such as officers of the college would have, might secure more attention to completeness of detail, if not to better adaptation to the work in hand. Only the minor appropriations have been under control of this board, and of these detailed accounts are rendered in the financial report of the secretary.

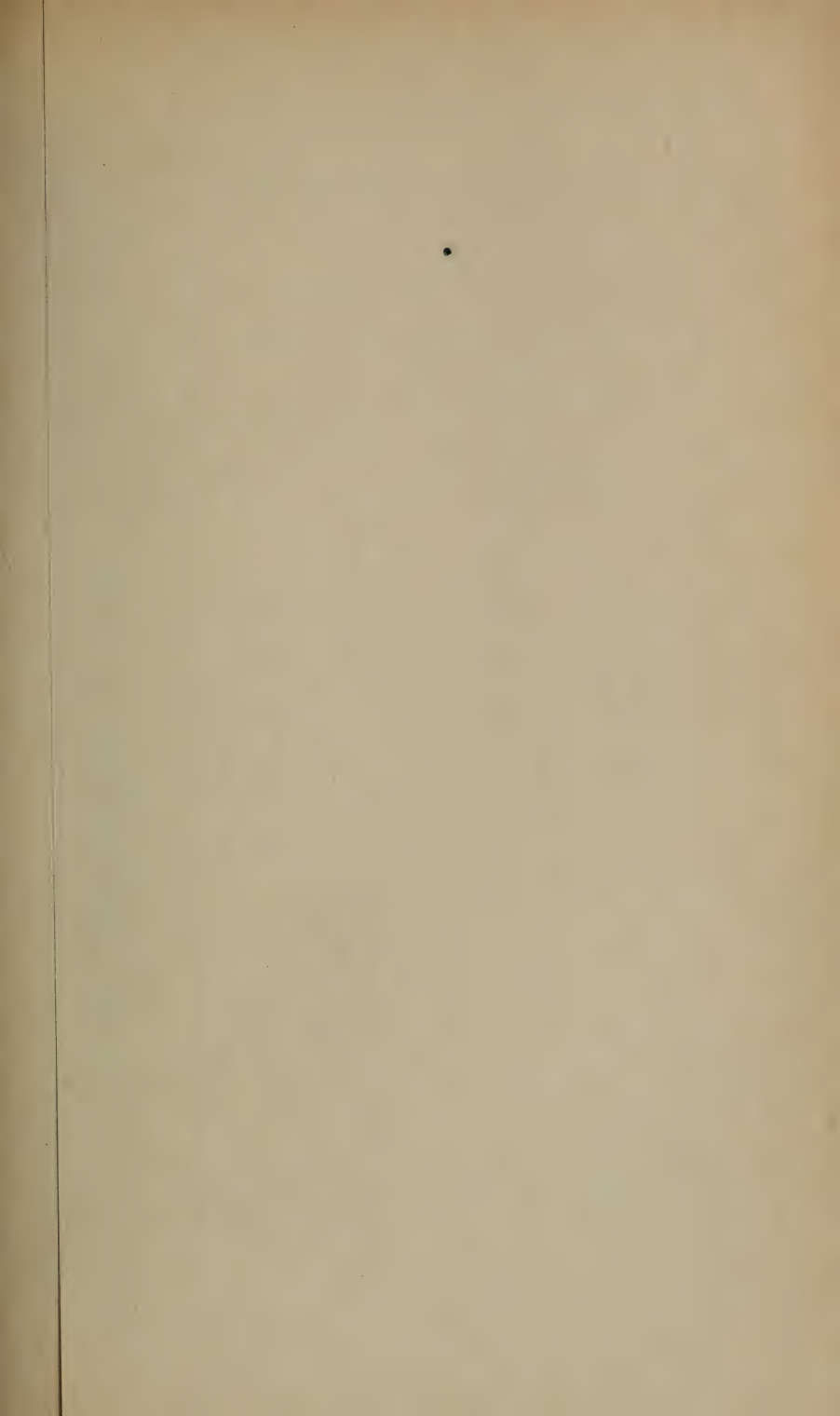
THE EXPERIMENT STATION.

The experiment station has carried on numerous experiments in various lines of agriculture, publishing from time to time the results of completed experiments. During the past two years these publications have been 14 bulletins and two annual reports. The titles of the bulletins, showing the general scope of the work, are as follows :

- No. 33, farm department, Wheat.
- No. 34, farm department, Feeding Steers.
- No. 35, veterinary department, Lumpy Jaw and Loco.
- No. 36, chemical department, Sorghum and Sugar Beets.
- No. 37, horticultural department, Potatoes.
- No. 38, botanical department, Rusts of Grain.
- No. 39, farm department, Feeding Steers, II.
- No. 40, farm department, Wheat.
- No. 41, botanical department, Fungicides on Germination of Corn.
- No. 42, farm department, Oats.
- No. 43, chemical department, Sorghum and Sugar Beets.
- No. 44, horticultural department, Native Grapes.
- No. 45, farm department, Corn.
- No. 46, botanical department, Rusts of Grain, II.

The annual reports show much work in progress not yet complete enough for final report, and some work which, on account of unfavorable seasons, proved inconclusive, and so unworthy of report. In the report of 1893, a most noteworthy table of observations upon rainfall and temperature for 36 years, compiled for periods of 10 days, shows most admirably the times of drought and the annual characteristics of our climate.

The station has recently, at the earnest request of interested persons in the western part of the state, undertaken experiments in irrigation. The limited means at disposal of the board made it necessary to confine these experiments in extent and locality. Two plants have been secured for trial of irrigation from wells by wind power, with design to cover all questions of water supply, adjusting to various crops, and effects of various modes of tillage and handling, in connection with a study of climatic conditions. One of these, at Garden City, is in operation, with Mr. F. W. Dunn in charge of the experiments, under direction of the station council. A report of details will be given in the annual report of the station. The other, at Oberlin, is being put into shape for early operation next year. Both are under lease to the



GROUNDS, EXPERIMENTAL FIELDS, AND PLANTATIONS
 OF THE
Kansas State Agricultural College

220 ACRES

The College uses 200 acres not shown here.



board of regents for 10 years, if desired, the permanent improvements to revert with the lands to the owners at the expiration of the lease. It seems very important that these experiments should be made as conclusive as possible, and the state may well devote means to these special investigations, as other states have done in similar cases, for more immediate results than can be gained by diverting a fair share of the annual fund of \$15,000 from lines of experiment already undertaken requiring a long series of years to complete. The board asks for the next two years \$5,000 for this work.

The repute of the work of this station for accuracy and thoroughness, as well as adaptations to the conditions of farming in this state, is well established, both in the state and throughout the nation. Words of commendation come unsought from every quarter. The increased demand for bulletins has led to editions of 8,000, instead of 7,000, as in past years, and these are likely to prove too few. It would be well if this state should provide, as several states have done, for the printing needed by the station, and a wider distribution of its bulletins. No better use of the printing funds can be made than to establish a broader basis for improvement in agriculture by distributing these reports of accurate tests of methods and varieties.

IMMEDIATE WANTS.

Without attempt to show all the reasons for additional buildings and equipments, it seems proper to call attention to the most prominent needs and append an itemized statement of minor details.

The department of domestic science has, with all its importance, had but a meager equipment in very confined quarters. It has sent out to other states as instructors a half dozen graduates who begin their work with better quarters and equipment than the older and larger institution has had. The first necessity is a building suited to this work, for which, including fixtures and equipment for classes of 150 young women, the estimated expense is \$20,000.

The dairy interests of the state are demanding recognition in a special school similar to those in several states, where the modern methods of butter and cheese making shall be in full operation for purposes of instruction. The estimated expense of starting such a school is \$7,500.

The need of a farm house near the barn, for the sake of having the foreman near the larger amount of property under his keeping, is again brought to the attention of the legislature. It seems absolutely essential as reasonable insurance.

Current repairs have been insufficiently provided for the past two years, and the current appropriation for 1894-'95 has been exhausted already in adjusting the new steam plant to the various buildings. Two buildings have needed new roofs for the past two years, and all the roofs and exteriors need painting. Other special items are given, with an estimate for miscellaneous matters which cannot be enumerated.

The new building cannot be fully utilized without further expenditure, as

itemized below, and the steam plant lacks completion, as shown in a similar estimate.

All estimates for buildings and repairs have the approval of the state board of public works, after a familiar acquaintance with the needs of the institution.

The need of additions to the library and apparatus cannot be overestimated, if the nature of the college as a scientific school is comprehended. The income is now barely sufficient to meet current expenses of instruction for 600 students, without providing for advancing needs in equipment to keep pace with advancing science. A schedule of wants, all of which are important, is given, with the hope that every item will receive earnest consideration.

SUMMARY OF NEEDS.

Estimates for Repairs and Improvements on Buildings and Grounds, 1894-'97.

Deficiencies for 1894-'95, incidental repairs.....	\$1,000
Miscellaneous repairs, painting, etc., 1895-'96.....	1,000
Miscellaneous repairs, painting, etc., 1896-'97.....	1,000
New roofs, metal, armory and farm house, 220 squares.....	1,800
Painting metal roofs, 4,600 square yards.....	150
New floors in chemical laboratory, wood shop, and armory, 21,000 square feet.....	1,050
Cement floor, basement main building, 900 square feet.....	200
Removing posts in wood shop, and trussing ceiling.....	200
New buildings:	
Domestic science hall and equipment.....	20,000
Dairy house and equipment.....	7,500
Farm house for foreman.....	1,000
Electric lighting—lamps, wiring, and storage battery.....	2,000
Improvement of grounds:	
Walks between buildings, vitrified brick or cement.....	1,000
Road, macadamized, from south entrance.....	1,500
Bridge at south entrance.....	350

Estimates for Furniture and Fixtures in Completing Library and Agricultural Science Hall, 1895-'97.

Cases for museum, herbarium, and laboratories, as planned by state architect.....	\$3,750
Other furniture for same.....	450
Furniture for library.....	500
Inside blinds, 150 windows.....	1,500
Completion of library stacks.....	5,300
Completion of sewer, 300 feet, 3½ feet deep, and silt basin.....	125

Estimates for Completion and Extension of Steam Plant.

Duplex pumps 5½ x 3½ x 5, return water feed pump.....	\$200
Repairs on old pump and setting small boiler feed pump.....	25
Lowering balance of pump pit to a single level.....	100
Traps for steam-line drips.....	20
Track for coal and ashes in boiler room, 175 feet, 12-pound rail, 2 switches.....	75
Two coal cars for coal and ashes, one-half ton each.....	100
Paving boiler-house floor with paving brick, about 850 feet.....	100

Pipe covering for engine steam pipes.....	\$75
Pipe covering for steam-heating pipes in boiler room.....	100
Covering steam pipes in ditches, 800 feet, from 12 to 22 feet deep, 450 feet each of 7- and 5-inch, and 350 of 4- and 3-inch pipe.....	1,300
Two new boiler fronts for 54-inch boilers.....	150
One 30-horse-power steel boiler, 46 inches by 12 feet, to replace old one....	250
Finish inside woodwork in boiler room, 1,500 square feet.....	75
Drain for blow-off for boilers, 450 feet of 6-inch sewer pipe, 4 feet deep....	110
Runway on top of boilers to get at valves.....	25
Extending steam heating to armory, 550 feet of 5-inch and 3½-inch pipe, covered 4 feet deep.....	2,000
Coal pit, 50 feet long and 16 feet wide.....	500
Roof over boiler-room door excavation.....	50
Increased radiating surface in chemical laboratory, 500 feet; armory, 500 feet; main building, 1,500 feet; shops, 1,000 feet.....	1,750

Estimates for Books, Apparatus, Tools, Instruments, and Collections, 1895-'97.

Books for library, each year, \$5,000.....	\$10,000
Tools for iron shop, milling and grinding machines.....	2,000
Bench tops in wood shop.....	100
Farm implements.....	250
Music rooms and instruments.....	2,500
Collections, zoölogical geological, and mineralogical, \$1,000 each year....	2,000
Collections, botanical, \$500 each year.....	1,000
Models, etc., for drawing department, \$250 each year.....	500
Charts, etc., department of literature.....	50
Charts, etc., department of history.....	50
Telephone system between buildings.....	250
Uniforms for military drill, 200, at \$10.....	2,000

Estimates for Agricultural Experiment.

Addition to farm lands.....	\$5,000
Equipment of irrigation plants, 1895-'96.....	3,000
Equipment of irrigation plants, 1896-'97.....	2,000
Cold-storage cellar.....	1,500

Estimates of Incidental Expenses.

Freight on coal, and hauling, \$1,500 each year.....	\$3,000
Salary of night watchman, one in summer, two in winter.....	1,800
Water supply, \$500 a year.....	1,000
Salary of loan commissioner, \$300 a year.....	600
Incidental expenses in care of funds for two years.....	300

Inviting attention to the specific reports of financial officers, the president and the several heads of departments appended, the above is

Respectfully submitted.

W. D. STREET.
HARRISON KELLEY.
ED. SECREST.
E. D. STRATFORD.
C. B. HOFFMAN.
C. E. GOODYEAR.
G. T. FAIRCHILD, *ex officio*.

FINANCIAL REPORTS.

LOAN COMMISSIONER'S REPORTS.

To the Board of Regents:

GENTLEMEN—I herewith hand you my report of investments made for the endowment fund of the state agricultural college, for the year ending June 30, 1893:

Invested in school bonds, 6 per cent.....	\$25,250 00
Invested in pay-roll warrants, 6 per cent.....	17,752 29
Total	\$43,002 29

Respectfully submitted. T. P. MOORE, *Loan Commissioner.*

HOLTON, KAS., June 30, 1893.

To the Board of Regents:

GENTLEMEN—I herewith submit my report of investments made for the endowment fund of the state agricultural college, for the year ending June 30, 1894:

Invested in municipal bonds, 6 per cent.....	\$87,500 00
Invested in school bonds, 6 per cent.....	500 00
Total	\$88,000 00

Respectfully submitted. E. D. STRATFORD, *Loan Commissioner.*

EL DORADO, June 30, 1894.

TREASURER'S REPORTS.

To the Board of Regents:

GENTLEMEN—Herewith find my report for the year ending June 30, 1893:

Income Account.

Balance on hand July 1, 1892.....	\$2,205 43
Received from state treasurer, interest.....	49,265 81
“ “ “ “ act of Congress, August, 1890.....	18,000 00
“ “ “ “ refunding appropriation.....	256 30
“ “ executive department.....	509 50
“ “ farm department.....	3,839 07
“ “ horticultural department.....	1,167 19
“ “ chemical department.....	69 41
“ “ mechanical department.....	1,901 45
“ “ printing department.....	365 42
“ “ botanical department.....	138 83
“ “ domestic department.....	328 27
“ “ sewing department.....	9 00
“ “ physics department.....	12 06
“ “ secretary.....	20 00
Total.....	\$78,112 24
Paid pay-roll warrants of 1891-'92.....	\$13,082 53
Approved vouchers presented, 1892-'93.....	70,132 21
	83,214 74
Approved vouchers due July 1, 1893.....	\$5,102 50

Appropriations, 1892-'93.

LIBRARY.

Received from state auditor	\$250 00
Paid on approved vouchers	250 00

GENERAL REPAIRS.

Received from state auditor	\$1,500 00
Paid on approved vouchers	1,500 00

WATER SUPPLY.

Received from state auditor	\$500 00
Paid on approved vouchers	500 00

CARE OF FUNDS, 1891-'95.

Received from state auditor, refunding for 1891-'93	\$256 30
Paid on approved vouchers of 1891-'93	256 30

SALARY OF LOAN COMMISSIONER.

Received from state auditor	\$200 00
Paid on approved vouchers	200 00

Respectfully submitted. JOSHUA WHEELER, *Treasurer.*

MANHATTAN, June 30, 1893.

To the Board of Regents:

GENTLEMEN—Herewith find my report for the period from July 1, 1893, to March 31, 1894:

Income Account.

Received from state treasurer, interest	\$26,383 50
“ “ “ “ act of Congress, August, 1890	19,000 00
“ “ executive department	154 27
“ “ farm department	997 02
“ “ horticultural department	507 21
“ “ chemical department	67 90
“ “ mechanical department	1,084 63
“ “ printing department	108 24
“ “ domestic department	208 41
“ “ sewing department	2 50
“ “ botanical department	112 05
“ “ library	5 00
“ “ physics department	6 90
“ “ veterinary department	70 60

Total	\$48,768 23
Approved vouchers due July 1, 1893	\$5,102 50
Approved vouchers presented, to March 31, 1894	47,224 50
	52,327 00

Approved vouchers due April 1, 1894	\$3,618 77
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Appropriations.

GENERAL REPAIRS.

Received from state auditor	\$908 89
Paid on approved vouchers	908 89

WATER SUPPLY.

Received from state auditor	\$275 40
Paid on approved vouchers	275 40

CARE OF FUNDS.

Received from state auditor	\$30 95
Paid on approved vouchers	30 95

Respectfully submitted. JOSHUA WHEELER, *Treasurer.*

MANHATTAN, April 1, 1894.

To the Board of Regents:

GENTLEMEN—Herewith find my report for the period from April 1, 1894, to June 30, 1894:

Income Account.

Received from state treasurer, interest.....		\$3,640 42
“ “ executive department.....		140 40
“ “ farm department.....	1,352 79	
“ “ horticultural department.....	529 61	
“ “ chemical department.....	11 85	
“ “ mechanical department.....	500 08	
“ “ printing department.....	38 50	
“ “ domestic department.....	141 38	
“ “ sewing department.....	10 00	
“ “ botanical department.....	43 60	
“ “ veterinary department.....	14 50	
Total.....		\$6,423 13
Approved vouchers due April 1, 1894.....	\$3,618 77	
Approved vouchers presented, to June 30, 1894.....	13,871 83	
		17,490 60
Approved vouchers due June 30, 1894.....		\$11,067 47

Appropriations.

GENERAL REPAIRS.

Received from state auditor.....	\$91 11
Paid on approved vouchers.....	91 11

WATER SUPPLY.

Received from state auditor.....	\$208 28
Paid on approved vouchers.....	208 28

CARE OF FUNDS.

Received from state auditor.....	\$6 25
Paid on approved vouchers.....	6 25

Respectfully submitted.

ED. SECREST, *Treasurer.*

MANHATTAN, June 30, 1894.

SECRETARY'S REPORT.

To the Board of Regents:

GENTLEMEN—Herewith are presented, in concise tabular form, transcripts from the books of this office, showing the condition of the endowment fund at the close of each month, the sources of income each year, the summary of the annual inventory, and the expenditures and receipts of each college department, for the years ending June 30, 1893, and June 30, 1894. There are also added, as required by law, explicit statements of the items of expenditure under special appropriations for the same year.

Full ledger accounts of the invested funds, showing the exact condition in each investment of every kind, are kept from data furnished through triplicate receipts by the state treasurer, after original entry of each bond purchased, as to both principal and coupons. Accounts are also kept with the state treasurer and the college treasurer, the several departments of the college, special appropriations, and the distinct funds in charge of the board of

regents. Vouchers for all expenditures, in duplicate or triplicate, and duplicate receipts for all cash received, with all general accounts, have been carefully audited, as you are aware, by the board of regents at the regular quarterly meetings, and the final summary has been carefully tested by comparison of the reports of other officers herewith presented. All papers are filed, readily accessible to anyone inquiring into the financial condition of the college.

A separate account is kept with the experiment station in both the secretary's and treasurer's offices. A transcript of each is published in the annual report of the station. This report is submitted to the governor on the 1st day of February in each year.

Trusting that this report will be found in all respects correct and satisfactory, it is respectfully submitted for your consideration.

GEORGE T. FAIRCHILD, *Secretary.*

I. D. GRAHAM, *Assistant Secretary.*

COLLEGE, June 30, 1894.

SOURCES OF INCOME.

	1892-'93.	1893-'94.
THROUGH STATE TREASURER.		
Payment of U. S. treasurer, act of Congress, 1890.....	\$18,000 00	\$19,000 00
Interest on school bonds, 10 per cent.....	130 00	.....
“ “ “ 7 “	1,456 03	1,218 31
“ “ “ 6 “	8,408 96	10,626 14
“ “ “ 5 “	25 00	42 50
“ municipal bonds, 8 per cent.....	100 00	.....
“ “ “ 7 “	843 50	563 50
“ “ “ 6 “	17,304 00	16,138 00
“ real-estate securities, 8 per cent.....	120 00	120 00
“ “ “ 7 “ .....	.....	50 00
“ land contracts, 10 per cent.....	1,535 30	748 42
“ delinquent interest.....	264 25	253 91
Totals.....	\$48,187 04	\$48,760 78
COLLEGE DEPARTMENTS.		
Appropriations, care of funds, 1891-'93.....	\$256 30	.....
Sales of produce, stock, etc.....	1,781 53	\$3,279 69
Labor and materials for repairs, etc.....	1,638 75	1,025 04
Labor and materials for station.....	1,944 42	1,800 12
Refunded voucher.....	20 00	2 59
Totals.....	\$8,641 00	\$6,107 44
Through state treasurer.....	48,187 04	48,760 78
Grand totals.....	\$56,828 04	\$54,868 22

CASH EXPENDITURES AND RECEIPTS, 1893-'94.

DEPARTMENTS.	EXPENDITURES.					RECEIPTS.			Actual expense.	Actual proceeds.
	State appro- priations.	Income fund.		Department transfers.	Inventory decrease.	Cash.	Department transfers.	Inventory increase.		
		Salaries.	Supplies, etc.							
Executive.....	\$1,440 43	\$5,216 69	\$3,623 49	\$613 19	\$284 89	\$294 67	\$62 07	.....	\$10,821 95	.....
Farm.....	1,400 03	5,330 88	80 36	.....	2,349 81	62 96	\$886 71	3,511 79	.....
Horticultural.....	3,231 06	2,856 98	80 43	238 29	1,036 82	44 08	.....	5,325 86	.....
Chemical.....	2,683 36	317 18	166 84	.....	79 75	.....	152 25	2,935 38	.....
Mechanical.....	3,966 70	5,990 25	38 77	.....	1,584 71	1,021 75	2,223 79	5,105 47	.....
Printing.....	1,200 00	2,129 79	130 25	.....	146 74	264 90	740 54	2,307 86	.....
Botany.....	1,020 00	748 43	23 34	.....	155 65	.....	193 82	1,442 30	.....
Domestic.....	1,200 00	521 16	97 01	.....	349 79	.....	3 50	1,464 88	.....
Sewing.....	1,359 98	53 32	5 10	5 75	12 50	3 25	.....	1,408 40	.....
Library.....	600 00	1,863 32	17 84	.....	5 00	.....	2,721 50	.....	\$244 84
Physics.....	1,599 98	265 13	16 43	.....	6 90	.....	220 25	1,654 39	.....
Industrial art.....	1,788 36	203 96	144 12	.....	.....	.....	144 02	1,992 42	.....
Music.....	1,000 00	15 50	6 00	.....	.....	.....	29 18	992 32	.....
Mathematics.....	2,821 21	72 40	1 29	.....	.....	.....	.....	2,893 71	.....
English.....	3,373 30	.....	1 29	.....	.....	.....	.....	3,374 59	.....
History and civics.....	1,634 48	45	12	.....	.....	.....	.....	1,635 05	.....
Military.....	19 31	62 03	8 38	409 26	.....	.....	.....	498 98	.....
Physiology and veterinary.....	853 31	1,259 32	32 96	.....	85 10	3 52	1,072 29	984 68	.....
Loan and treasury.....	337 20	.....	874 47	.....	5,968 29	49,023 92	.....	.....	.....	41,843 96
Totals.....	\$1,777 63	\$34,907 77	\$26,188 56	(\$1,462 53)	\$6,906 48	\$55,131 36	(\$1,462 53)	\$8,387 85	\$48,350 03	\$42,088 80
In state treasury.....	263 14	.....	.....	.....	263 14	.....
Grand totals.....
Balance.....	\$70,043 58	.....	.....	\$63,519 21	\$48,613 17	\$42,088 80
	6,524 37	.....	6,524 37

MONTHLY BALANCES, 1892-'93.

MONTHS.	SCHOOL BONDS.				MUNICIPAL BONDS.		Pay-roll warrants, 6 per cent.	Land contracts, 10 per cent.	REAL-ESTATE SECURITIES.		Cash.	ENDOWMENT.	
	5 per cent.	6 per cent.	7 per cent.	10 per cent.	6 per cent.	7 per cent.			8 per cent.	7 per cent.		Totals.	Productive.
July.....	\$1,000	\$181,970 85	\$25,139 50	\$1,300	\$247,395	\$3,200	\$13,082 63	\$9,339 47	\$1,500	\$1,400	\$17,600 00	\$502,927 35	\$485,927 35
August.....	1,000	173,730 85	24,289 50	1,300	244,395	3,200	16,812 43	9,339 47	1,500	1,400	19,960 10	502,927 35	482,967 25
September.....	1,000	190,380 85	24,289 50	1,300	244,395	3,200	16,812 43	9,339 47	1,500	1,400	9,310 10	502,927 35	493,617 25
October.....	1,000	196,780 85	24,289 50	1,300	244,395	3,200	16,812 43	9,339 47	1,500	1,400	2,910 10	502,927 35	500,017 25
November.....	1,000	196,780 85	24,289 50	1,300	244,395	3,200	16,812 43	8,679 47	1,500	1,400	2,910 10	502,927 35	498,857 25
December.....	1,000	196,480 85	24,089 50	1,300	244,395	3,200	16,812 43	8,679 47	1,500	1,400	4,070 10	502,927 35	498,857 25
January.....	1,000	194,431 85	23,089 50	1,300	243,395	3,200	29,655 78	8,679 47	1,500	1,400	4,275 75	502,927 35	498,651 60
February.....	1,000	192,017 27	23,089 50	1,300	234,395	3,200	24,475 82	7,419 47	1,500	1,400	11,780 29	502,927 35	491,147 06
March.....	1,000	196,467 27	23,089 50	1,300	232,895	3,200	.....	7,419 47	1,500	1,400	34,656 11	502,927 35	468,371 24
April.....	1,000	198,567 27	23,089 50	1,300	232,895	3,200	.....	7,419 47	1,500	1,400	32,556 11	502,927 35	470,371 24
May.....	1,000	197,867 27	23,089 50	1,300	232,895	3,200	.....	7,419 47	1,500	1,400	33,256 11	502,927 35	469,671 24
June.....	1,000	194,267 27	22,989 50	100	201,895	3,200	.....	7,419 47	1,500	1,400	63,156 11	502,927 35	439,771 24

MONTHLY BALANCES, 1893-'94.

MONTHS.	SCHOOL BONDS.				MUNICIPAL BONDS.		Pay-roll warrants, 6 per cent.	Land contracts, 10 per cent.	REAL-ESTATE SECURITIES.		Cash.	ENDOWMENT.	
	5 per cent.	6 per cent.	7 per cent.	10 per cent.	6 per cent.	7 per cent.			8 per cent.	7 per cent.		Totals.	Productive.
July.....	\$700	\$188,825 27	\$22,179 50	\$100	\$207,895	\$3,200	.....	\$7,419 47	\$1,500	\$1,400	\$69,708 11	\$502,927 35	\$433,219 24
August.....	700	187,709 27	22,064 50	100	266,395	3,200	.....	7,419 47	1,500	1,400	12,439 11	502,927 35	490,488 24
September.....	700	187,709 27	22,064 50	100	276,395	3,200	.....	7,419 47	1,500	1,400	2,439 11	502,927 35	500,488 24
October.....	700	187,709 27	22,064 50	100	276,395	3,200	.....	7,419 47	1,500	1,400	2,439 11	502,927 35	500,488 24
November.....	700	187,709 27	22,064 50	100	278,395	3,200	.....	7,419 47	1,500	1,400	439 11	502,927 35	502,488 24
December.....	700	186,399 27	22,064 50	100	278,395	3,200	.....	7,419 47	1,500	1,400	1,749 11	502,927 35	501,178 24
January.....	700	183,154 27	20,544 50	100	282,895	3,200	.....	7,419 47	1,500	1,400	2,014 11	502,927 35	500,913 24
February.....	700	181,514 05	20,544 50	100	277,895	3,200	.....	7,419 47	1,500	1,400	8,654 33	502,927 35	494,273 02
March.....	700	181,514 05	20,544 50	100	277,895	3,200	.....	7,419 47	1,500	1,400	8,654 33	502,927 35	494,273 02
April.....	700	181,514 05	20,544 50	100	279,395	3,200	.....	6,089 47	1,500	1,400	8,484 33	502,927 35	494,443 02
May.....	700	181,514 05	20,544 50	100	286,395	3,200	.....	4,689 47	1,500	1,400	2,884 33	502,927 35	500,043 02
June.....	700	180,414 05	19,444 50	100	286,395	3,200	.....	3,394 47	1,500	1,400	5,084 33	501,632 35	496,548 02

COLLEGE FUNDS.

Delinquent bonds and coupons, October 20, 1894.

COUNTY.	School district.	BONDS.		COUPONS.		Due.
		No.	Amount.	No.	Amount.	
Allen	38	1	\$125 00	4	\$15 00	July 1, 1894.
Anderson	21	Bal.	200 00			" 1, 1894.
Barber	37			5	75 00	" 1, 1894.
Barber, Sun City				10	30 00	" 1, 1894.
Butler, Eldorado Bd. of Ed				5	150 00	" 1, 1894.
Chautauqua	10	Bal.	360 00			" 1, 1894.
"	152	Bal.	350 00			" 1, 1893.
Ford	21	1	150 00			Jan. 1, 1894.
Graham	44	Bal.	26 62			July 1, 1891.
Greenwood	88	1	200 00			" 1, 1893.
Jewell	103			1	10 50	" 1, 1894.
"	103			1	6 00	" 1, 1894.
Logan	2	1	500 00	2	30 00	" 1, 1894.
Morris	11	1	300 00			" 1, 1894.
"	62	1	125 00			" 1, 1893.
Osage, Scranton				1	75 00	" 1, 1894.
Republic, Scandia		2	800 00			Sep. 1, 1894.
Riley	36			2	8 40	July 1, 1894.
"	44			4	14 40	" 1, 1894.
"	73			2	6 00	" 1, 1894.
" and Washington, joint	14	1	100 00			" 1, 1894.
"	15	Bal.	90 00			" 1, 1894.
Wyandotte, Argentine				17	255 00	Aug. 1, 1894.
Totals			\$3,326 62		\$675 30	

SUMMARY OF COLLEGE INVENTORY.

Executive Department.

	June 30, 1893.	June 30, 1894.
Farm, grounds, dwellings, and waterworks	\$51,151 42	\$51,151 42
College hall	79,000 00	79,000 00
Armory	10,950 00	10,950 00
Mechanics' hall	11,000 00	11,000 00
Horticultural hall	4,200 00	4,200 00
Chemical laboratory	9,600 00	9,600 00
In college hall, furniture and supplies	2,165 53	1,935 63
In armory	245 40	246 73
In mechanics' hall	101 92	97 42
In horticultural hall	136 00	136 00
In chemical laboratory	131 41	136 91
In president's office	1,055 58	990 00
In vault	83 50	90 50
In secretary's office	722 36	715 87
In chapel stage	165 00	165 00
In reception room	330 00	330 00
In roofing slate on hand	75 00	75 00
In Columbian exposition pictures, etc	1,006 10	1,013 85
Totals	\$172,119 22	\$171,834 33

Treasurer's Department.

June 30, 1893. June 30, 1894.

Accounts receivable.....	\$4 72	\$4 72
Office furniture.....	81 45	78 13
Totals.....	\$86 17	\$82 85

Farm Department.

Buildings.....	\$10,760 00	\$10,740 00
Work horses.....	375 00	375 00
Cattle—Shorthorns.....	3,075 00	2,850 00
“ Polled Angus.....	1,310 00	1,365 00
“ Jerseys.....	725 00	875 00
“ Herefords.....	850 00	350 00
“ Holsteins.....	600 00	750 00
“ Steers, for experiments.....	615 00	709 00
Swine—Berkshires.....	165 00	195 00
“ Poland Chinas.....	75 00	220 00
“ Grades.....		97 00
Sheep—Shropshires.....	310 00	370 00
Machinery and tools.....	2,638 00	3,216 52
Miscellaneous farm tools.....	556 77	629 76
Office fixtures.....	243 50	247 50
Wells, fences, etc.....	2,289 50	2,387 50
Crops in barn.....	1,417 10	467 39
Crops in ground.....		1,047 00
Totals.....	\$26,004 87	\$26,891 58

Horticultural Department.

Plantations.....	\$3,252 00	\$3,252 00
Greenhouse and stock.....	9,116 14	9,116 14
Greenhouse and lawn tools and supplies.....	294 28	289 43
Horses and horse tools.....	841 55	853 35
Hand and garden tools and fixtures.....	455 33	391 49
Workshop tools.....	48 65	46 65
Office furniture and apparatus.....	3,687 16	3,680 16
Supplies on hand.....	269 13	96 76
Stone barn.....	1,000 00	1,000 00
Totals.....	\$18,964 24	\$18,725 98

Botanical Department.

Microscopes and accessories.....	\$1,343 57	\$1,359 17
Furniture and cases.....	639 05	706 30
Supplies.....	113 46	186 41
General herbarium.....	1,176 65	1,099 50
Kansas herbarium.....	550 00	600 00
Cryptogamic herbarium.....	213 00	258 00
Herbarium duplicates.....	520 00	400 00
Tools and apparatus.....	291 01	431 18
Totals.....	\$4,846 74	\$5,040 56

Chemical Department.

	<i>June 30, 1893.</i>	<i>June 30, 1894.</i>
Chemicals.....	\$223 15	\$214 95
Chemical apparatus.....	3,130 00	3,058 45
Platinum ware, wire, etc.....	141 00	139 00
Mineral and rock collections.....	2,148 35	2,243 00
Cases, etc.....	1,232 00	1,225 00
Office furniture and supplies.....	160 70	164 05
Analytical tables, with water, gas, etc.....	1,340 55	1,483 55
Totals.....	\$8,375 75	\$8,528 00

Museum and Veterinary Department.

Zoölogy.....	\$2,074 45	\$2,132 95
Scientific club.....	121 00	121 00
Geology.....	1,298 00	1,298 00
Anatomy.....	768 79	1,769 69
Cases.....	2,390 40	2,390 40
Apparatus.....	360 73	373 62
Totals.....	\$7,013 37	\$8,085 66

Domestic Department.

Kitchen laboratory.....	\$689 70	\$685 60
Canned fruit.....	.....	5 00
Dairy.....	181 75	184 35
Totals.....	\$871 45	\$874 95

Physics Department.

General physical apparatus.....	\$443 05	\$452 55
Sound apparatus.....	104 50	106 35
Heat apparatus.....	161 90	164 45
Meteorological apparatus.....	190 15	190 35
Light apparatus.....	537 99	580 05
Bells and lines.....	177 95	200 45
Electrical apparatus.....	1,866 61	2,015 65
Telegraph supplies.....	102 60	95 15
Cases, etc.....	597 00	597 00
Totals.....	\$4,181 75	\$4,402 00

Mathematical Department.

Surveying apparatus.....	\$1,332 75	\$1,323 50
Mathematical apparatus.....	59 50	68 75
Totals.....	\$1,392 25	\$1,392 25

Industrial Art Department.

Furniture.....	\$1,172 24	\$1,260 96
Models and studies.....	548 60	592 00
Apparatus and materials.....	217 05	228 95
Totals.....	\$1,937 89	\$2,081 91

English Department.

Cyclostyle, pictures, etc.....	\$30 00	\$30 00
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History and Political Science Department.

Maps and charts.....	\$78 29	\$78 29
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Mechanical Department.

June 30, 1893. June 30, 1894.

Wood shop, equipment and supplies.....	\$8,242 10	\$7,652 06
Machine shop, equipment and supplies.....	4,042 26	4,282 17
Foundry, equipment and supplies.....	1,143 04	1,324 53
Blacksmith shop, equipment and supplies.....	1,131 78	1,126 85
Pipe house, equipment and supplies.....	299 97	348 57
Blue-print room.....	47 70	59 70
Power house, machinery.....		1,956 97
Mason supplies.....		3 15
Office furniture, etc.....	308 00	375 75
Bills receivable.....	68 12	824 01
Department accounts.....	434 15	
Cash.....	12 85	
Totals.....	\$15,729 97	\$17,953 76

Sewing Department.

Furniture.....	\$146 50	\$146 50
Machines.....	305 00	305 00
Cases and apparatus.....	244 25	238 50
Totals.....	\$695 75	\$690 00

Printing Department.

Presses, type, etc.....	\$3,740 94	\$4,328 24
Office furniture.....	135 56	143 25
Paper stock.....	123 30	221 55
Bills receivable.....	24 00	71 30
Totals.....	\$4,023 80	\$4,764 34

Musical Department.

Instruments.....	\$1,720 52	\$1,726 20
Furniture, apparatus, etc.....	2,739 65	2,763 15
Totals.....	\$4,460 17	\$4,489 35

Military Department.

Uniforms (badly worn, but carried at cost).....	\$1,249 42	\$1,240 00
Cases, tools, etc.....	138 95	138 95
Totals.....	\$1,388 37	\$1,378 95

Library Department.

Books and pamphlets.....	\$22,258 32	\$24,978 41
Furniture.....	700 10	700 10
Catalogues.....	1,977 00	1,977 00
Binders, cases, etc.....	172 15	168 50
Cash, etc.....		5 06
Totals.....	\$25,107 57	\$27,829 07
Grand totals.....	\$297,307 62	\$305,153 80

[The new buildings — agricultural science hall and steam plant — have not yet been turned over to the college by the state board of public works. These will add to the total inventory about \$75,000.]

BIENNIAL REPORTS
OF THE
COLLEGE DEPARTMENTS,
1893-'94.

REPORT OF THE PRESIDENT.

To the Board of Regents:

GENTLEMEN—In presenting a report of matters under my direction as chief executive officer of the Kansas State Agricultural College during the two years ending June 30, 1894, I am glad to congratulate you upon the general prosperity of all departments, but must refer you to the several reports of professors and superintendents for details.

The faculty now numbers 24 persons, having individual responsibility for the instruction and direction of students, and so responsible for the general discipline of the college. This body has held weekly meetings for consultations over the welfare of students generally and individually, acting upon all matters of mutual concern with satisfactory unanimity. For more effective deliberation, the following standing committees are maintained:

Postgraduate Courses.—Professors Failyer, Popenoe, Walters, Hood, Georgeson, and Hitchcock.

Museums.—Professors Popenoe, Graham, Mayo, Hitchcock, Mason, and Failyer.

Library.—Professors Lantz, Popenoe, Olin, Georgeson, Willard, and Miss Pearce.

Industrialist and Press Club.—Professors Walters, Failyer, Olin, Thompson, Georgeson, and Jones.

Examinations and Grades.—Secretary Graham, Professors Lantz, Olin, White, and Misses Harper and Rupp.

Public Exercises.—Professors Olin, Kedzie, Brown, White, Jones, and Will.

Social and Literary Entertainments.—Mrs. Kedzie, Mrs. Winchip, Professors Hood and Brown, and Misses Harper and Rupp.

Buildings.—Professors Hood, Walters, Mayo, Willard, Hitchcock, and Mason.

Farmers' Institutes and Lecture Course.—Professors Georgeson, Failyer, Popenoe, Walters, Graham, and Mason.

Catalogue, Blanks, etc.—Professors White, Lantz, Graham, Thompson, Willard, and Will.

Athletics and Calisthenics.—Professors Mayo, Failyer, Walters, Mrs. Kedzie, Mrs. Winchip, and Captain Cavanaugh.

Grounds.—Professors Mason, Popenoe, Lantz, Hood, Georgeson, and Cavanaugh.

Besides the faculty, we have a corps of efficient foremen and assistants, numbering nine in college work and six in station work. These have respon-

sibility in execution of plans made by the heads of departments, and in oversight of industrial and laboratory work of students, and are experts in their several places.

For special occasions, it has been at times necessary to use advanced students, especially graduates, to aid in instruction of irregular classes provided for students over 18 years of age not qualified for the course. Of such classes, we have usually six each term, three or four of which are taught by temporary supply. These special teachers have been chosen for ability, and have been successful in maintaining good work.

Other employés have, for the most part, been the same faithful helpers of past years. Mr. A. C. McCreary, whose most efficient service as janitor has been recognized for many years, was compelled by ill health to seek relief by a six-months residence in California, and afterwards by surgical treatment, his place being temporarily supplied during his absence. By unanimous desire of the faculty, his place was kept open for his return with restored health, and he has been at his post for the past year.

It is matter of congratulation for all interested in an educational institution when its welfare and progress are assured by a stable body of experienced officers. That no serious break has occurred in the well-known ranks of our faculty, proves to me the confidence of both the members of the faculty and the people of the state in the general policy of the college and its successful work. Several of the professors show their faithfulness to the ideal by 15 years or more of service, with many inducements in the way of larger salaries or extensive perquisites elsewhere. The later acquisitions from schools of high repute in the nation have accepted heartily the work here as near the people, and directly useful.

The absence of Professor Nichols from the chair of physics, for the purpose of further study, will be seriously felt, and it is earnestly hoped that his services may not be lost to the college after his leave of absence for the current year has expired.

The work of the faculty outside the requirements of the several departments embodied in special reports, includes editorial work on the *Industrialist*, a course of lectures at the college, a series of farmers' institutes each winter in various counties of the state, a short course for farmers' families in February each year, and a share in most of the agricultural and educational gatherings of the state.

LECTURES.

The lectures before the students on Friday afternoons have been as follows:

1892-'93.

Professor Olin, September 23, "Failures."

Professor Kedzie, October 17, "The Yosemite Valley."

Professor Hood, November 5, "Lynn, Mass."

Professor Brown, December 2, "Time."

Superintendent Thompson, January 13, "Chicago."

Professor White, February 17, "Universal Education."
 Captain Bolton, March 17, "The Nicaragua Canal."
 Professor Georgeson, April 14, "Denmark."
 Professor Nichols, May 12, "Comets."
 Professor Mayo, June 2, "The Michigan Agricultural College."

1893-'94.

Professor Lantz, September 22, "The Dewey System of Library Classification."

Professor Willard, September 29, "Ferments."
 Professor Hitchcock, October 20, "A Personal Reminiscence."
 Miss Harper, November 24, "Norway."
 Professor Mason, January 12, "Maple Sugar and Sugar Maples."
 Miss Rupp, February 16, "The Power of Influence."
 Mr. Jones, March 9, "The Evolution of Student Honor."
 President Fairchild, April 27, "Boyhood in the Good old Times."
 Professor Failyer, May 11, "Professor Tyndall."
 Professor Popenoe, June 8, "Darwin."

FARMERS' INSTITUTES.

The college has been represented by from one to three members of the faculty in farmers' institutes, as follows:

1892-'93.

Oneida, Nemaha county.	Osborne, Osborne county.
Frankfort, Marshall county.	Oskaloosa, Jefferson county.
Gardner, Johnson county.	Dodge City, Ford county.
Bluff City, Harper county.	Garden City, Finney county.
Oak Grange, Shawnee county.	Constant, Cowley county.
McPherson, McPherson county.	

1893-'94.

Oberlin, Decatur county.	Iola, Allen county.
Hanover, Washington county.	Ottawa, Franklin county.
Oneida, Nemaha county.	Russell, Russell county.
Edgerton, Johnson county.	Hutchinson, Reno county.
Lakin, Kearny county.	Junction City, Geary county.
Goodland, Sherman county.	Minneapolis, Ottawa county.
Garden City, Finney county.	McLouth, Jefferson county.
Oak Grange, Shawnee county.	Phillipsburg, Phillips county.
Hiawatha, Brown county.	

In the winter of 1893, a short course of lectures for farmers and their families was instituted at the college, continuing through the first two weeks of February. The course was attended by some 50 farmers from this county, with a smaller number from other counties. In 1894 a similar course received about the same attention from farmers, though it was widely adver-

tized. A third trial is proposed in 1895, with the hope that a larger interest may be awakened. The lectures for the past two years have been as follows:

1893.

- "Principles of Propagation in Horticulture," Professor Mason.
- "Small-Fruit Culture," Professor Mason.
- "Grape Culture," Professor Mason.
- "Special Insect Pests of the Orchard," Professor Popenoe.
- "Special Insect Pests of the Garden," Professor Popenoe.
- "Use of Insecticides, with Methods," Professor Popenoe.
- "Useful and Noxious Birds," Professor Lantz.
- "Cross Fertilization of Plants," Professor Hitchcock.
- "Common Agricultural Fungous Pests and their Treatment," Professor Hitchcock.
- "Dissemination of Plants," Professor Hitchcock.
- "Feeding and Feeding Stuffs," Professor Failyer.
- "Milk, Butter, and Cheese," Professor Willard.
- "Soils and their Improvement," Professor Failyer.
- "Plants in their Relation to the Air and Soil," Professor Failyer.
- "Care of Sick and Wounded Stock," Doctor Mayo.
- "Veterinary Surgery," Doctor Mayo.
- "Judging Horses," Doctor Mayo.
- "Country Roads," Professor Lantz.
- "Farm Buildings," Professor Walters.
- "Home Grounds," Professor Walters.
- "Preservation of Foods," Mrs. Kedzie.
- "Division of Labor on the Farm," President Fairchild.
- "Elementary Principles of Farm Mechanics," Professor Hood.
- "Electrical Frauds," Professor Nichols.
- "Economic Production and Use of Energy on the Farm," Professor Hood.
- "Taxation," Professor White.
- "Farm Accounts," Secretary Graham.
- "The Farmer as a Producer of Wealth," President Fairchild.
- "Mixed Husbandry," Hon. Joshua Wheeler, Nortonville.
- "The Apple Orchard," Judge F. Wellhouse, Fairmount.
- "Sheep Industry," Mr. H. A. Heath, of the *Kansas Farmer*.
- "Swine Industry," Hon. F. D. Coburn, Kansas City.
- "The Balanced Ration," Mr. P. S. Creager, of the *Topeka Capital*.

1894.

- "The Family as a Factor in Farming," President Fairchild.
- "Speculation in Farming," President Fairchild. •
- "Geology of Soils," Professor Failyer.
- "Nitrogen in Agriculture," Professor Failyer.
- "The Impurities in Water," Professor Failyer.
- "Principles of Economic Entomology," Professor Popenoe.

- "Farm Insects," Professor Popenoe.
- "Insects of Orchard and Garden," Professor Popenoe.
- "Birds and the Farmer," Professor Lantz.
- "Home Grounds and Farm Buildings," Professor Walters.
- "Farm Accounts," Secretary Graham.
- "Preservation and Preparation of Foods," Mrs. Kedzie.
- "Motors for the Farm," Professor Hood.
- "History and Description of Prominent Breeds of Cattle," Professor Georgeson.
- "Maintaining the Fertility of the Farm," Professor Georgeson.
- "Stock Breeding—Laws of Heredity," Professor Georgeson.
- "Stock Feeding," Professor Georgeson.
- "Lightning Conductors," Professor Nichols.
- "Lameness," Doctor Mayo.
- "Veterinary Obstetrics," Doctor Mayo.
- "Colic in Horses," Doctor Mayo.
- "Fermentation and Some of its Relations to Agriculture," Professor Wil-
lard.
- "Wheat Rust," Professor Hitchcock.
- "Treatment of Plant Diseases," Professor Hitchcock.
- "How Plants Live," Professor Hitchcock.
- "Cultivation of Orchard Fruits," Professor Mason.
- "The Farm Garden," Professor Mason.
- "The Irrigation Question," E. B. Cowgill, of the *Kansas Farmer*.
- "The Dairy Interest," J. E. Nissley, Abilene.
- "Horse Breeding as a Component of General Farming," F. H. Avery,
Wakefield.
- "Swine Husbandry," Judge Wm. B. Sutton, Russell.
- "Poultry Breeding," Hon. J. C. Snyder, Constant.

The part taken by the several professors in the various meetings of the state are referred to in their reports. It is proper to say that their services are in constant demand far beyond the possibility of sparing them from routine duty, for lectures of all kinds. For the most part, their attention has been confined to gatherings of farmers or of teachers.

In the fall of 1893, a series of weekly lectures upon topics of economic interest was provided, under direction of a committee of the board of regents. These were held on Friday evenings in the college chapel, with the hope that students would largely attend, and that people from town would be attracted. The audiences varied from 50 to 600, with the note of the speaker, averaging about 200. The speakers and their topics were as follows:

- "Government Control of Means of Transportation and Communication,"
Dr. J. E. Earp, El Dorado.
- "The Production of Wealth," Pres. Geo. T. Fairchild.
- "Interest: its Character and Tendencies; Usury and Preventives," Rev.
V. H. Biddison, Marysville.

"The Nature of Wealth and its Relation to Human Welfare," Dr. J. E. Earp, El Dorado.

"Principles of Early Federal Taxation," Prof. A. S. Olin, Lawrence.

"The Credit System: its Uses and Dangers," Hon. S. O. Thacher, Lawrence.

"Coinage," Albert Griffin, Manhattan.

"Hard Times: their Cause and Cure," Mrs. Mary E. Lease.

The usual public exercises and entertainments have been held each year, giving an annual exhibition of each of the four literary societies, and a public lecture in commencement week before the united societies. The lecture of 1893 was by Doctor Henson, of Chicago, and that of 1894 by Prof. W. A. Kellerman, of Ohio state university.

Under the auspices of the faculty committee, three social gatherings in the college building have been given each year, one about Thanksgiving day, one at Washington's birthday, and one about the first of May. These are accompanied with some pleasant entertainment in the chapel.

The commencement exercises of each year have included the baccalaureate sermon, class day, a public address on the evening before commencement, and abstracts of theses on commencement day from all the graduates. The sermon has been given, according to custom, by the president. In 1893, the address before the society of alumni by Prof. S. W. Williston, of the class of 1872, now in the Kansas State University, took place of the usual address, by invitation of the board of regents. In 1894, the public address was given by Mr. Hamlin Garland, of Chicago. The triennial reunion of the society of alumni made the commencement of 1893 especially pleasant.

The graduates of the two years have been as follows, 39 in each class:

1893.

Edmund Clarence Abbott, Garden city, Finney county.

Edwin McMaster Stanton Curtis, Council Grove, Morris county.

Corinne Louise Daly, Nashville, *Michigan*.

Laura Greeley Day, Manhattan, Riley county.

Ione Dewey, Manhattan, Riley county.

Albert Dickens, Alden, Rice county.

Mary Maud Gardiner, Bradford, Wabaunsee county.

Susie Hall, Farmington, Atchison county.

Mary Frances Burgoyne Harman, Valley Falls, Jefferson county.

Ivy Frances Harner, Lasita, Riley county.

Margaretha Elise Horn, Westerbergen, *Germany*.

Marcia Ione Hulett, Edgerton, Johnson county.

Onie Hulett, Edgerton, Johnson county.

Fred Hulse, Keats, Riley county.

Charles Augustus Kimball, Manhattan, Riley county.

Maude Ethel Knickerbocker, Long Pine, *Nebraska*.

Thomas Eddy Lyon, Riley, Riley county.

William Otis Lyon, Clay Centre, Clay county.

McLeod Wilson McCrea, Dunavant, Jefferson county.

Rose Edith McDowell, Manhattan, Riley county.

George Lane Melton, Silverdale, Cowley county.
 Eusebia DeLong Mudge, Eskridge, Wabaunsee county.
 Nora Newell, Manhattan, Riley county.
 August Fred Niemoller, Stitt, Dickinson county.
 Susie Amanda Noyes, Wabaunsee, Wabaunsee county.
 Henry Leamer Pellett, Prairie Centre, Johnson county.
 Charles John Peterson, Randolph, Riley county.
 Carl Frederic Pfuetze, Manhattan, Riley county.
 John Dewitt Riddell, Conway, McPherson county.
 John Albert Rokes, Onaga, Pottawatomie county.
 Agnes Romick, Manhattan, Riley county.
 Fred Raymond Smith, Manhattan, Riley county.
 George Wildman Smith, Manhattan, Riley county.
 William Elmer Smith, Manhattan, Riley county.
 John Eugene Thackrey, Manhattan, Riley county.
 Joseph B. Thoburn, Peabody, Marion county.
 Charles Henry Thompson, Bakersfield, *California*.
 George K. Thompson, Irving, Marshall county.
 William James Yeoman, La Crosse, Rush county.

1894.

Frank Weber Ames, Riley, Riley county.
 Clara Francelia Castle, Manhattan, Riley county.
 George Luther Christensen, Mariadahl, [Riley county.]*
 John Cornelius Christensen, Mariadahl, [Riley county.]*
 Lorena Estella Clemons, Alida, Geary county.
 Martha Cottrell, Wabaunsee, Wabaunsee county.
 Sarah Esther Cottrell, Wabaunsee, Wabaunsee county.
 Alverta May Cress, Manhattan, Riley county.
 Fannie Jane Cress, Steubenville, *Ohio*.
 Ernest A. Donaven, Agra, Phillips county.
 Jephthah W. Evans, Manhattan, Riley county.
 Isabella Russell Frisbie, North Topeka, Shawnee county.
 Eugene Leonard Frowe, Louisville, Pottawatomie county.
 Walter Harling, Olsburg, Pottawatomie county.
 Lorena Marguerite Helder, Manhattan, Riley county.
 Mark V. Hester, Haviland, Kiowa county.
 Charles Ross Hutchings, Pomona, Franklin county.
 Isaac Jones, jr., Ada, Lincoln county.
 Stella Victoria Kimball, Manhattan, Riley county.
 Mary Eliza Lyman, Manhattan, Riley county.
 William Henry Moore, Manhattan, Riley county.
 Sarah Moore, Gardner, Johnson county.
 James Francis Odle, Rossville, Shawnee county.
 Charles Randolph Pearson, Collyer, Trego county.
 Horace Greeley Pope, Manhattan, Riley county.
 Minnie Louisa Romick, Manhattan, Riley county.
 Winnie Luella Romick, Manhattan, Riley county.
 John Alfred Scheel, Emporia, Lyon county.
 Victor Irvin Sandt, Alden, Rice county.
 Jacob Ulrich Secrest, Randolph, Riley county.

*Residents of Riley county, but receive their mail through Mariadahl post office (Pottawatomie county).

Charles Chrisfield Smith, Manhattan, Riley county.

Jennie Ruth Smith, Manhattan, Riley county.

Wesley Ohio Staver, Glenn, Johnson county.

John Stingley, Manhattan, Riley county.

John Edwin Taylor, Berryton, Shawnee county.

Delbert L. Timbers, Beloit, Mitchell county.

Phœbe Carey Turner, Rock Creek, Jefferson county.

Samuel Robert Vincent, Argonia, Sumner county.

Lucy Helena Waters, Junction City, Geary county.

The degree of master of science, in course, has been conferred upon resident graduates after two years of study, or upon nonresident graduates after three years of study, for proficiency shown and presentation of theses embodying original research in one of the arts or sciences prescribed for such study. The following persons have received this second degree in the two years:

1893.—Resident.

Mark A. Carleton, '87, Manhattan, Riley county. Botany, Horticulture.

Clarence E. Freeman, '89, North Topeka, Shawnee county. Physics, Engineering.

Silas C. Mason, '90, Manhattan, Riley county. Horticulture, Botany.

Minnie Reed, '86, St. Clere, Pottawatomie county. Botany, Domestic Economy, Horticulture.

Marie Barbara Senn, '90, Enterprise, Dickinson county. Chemistry, Domestic Economy.

Lottie Jane Short, '91, Blue Rapids, Marshall county. Chemistry, Domestic Economy.

Lora Luvernia Waters, '88, Junction City, Geary county. Botany, Domestic Economy.

Nonresident.

John Brookings Brown, '87, Nashville, Tenn. Agriculture, Physics.

Walter Herbert Olin, '89, Osborne, Osborne county. Agriculture, Botany.

1894.—Resident.

Francis Charles Burtis, '91, Manhattan, Riley county. Agriculture, Botany.

Mary Emmeline Cottrell, '91, Wabaunsee, Wabaunsee county. Horticulture, Chemistry, Domestic Economy.

Arnold Emch, Gosslwil, Switzerland. Physics, Architectural Drawing.

Nonresident.

Judd Noble Bridgman, '91, Palo Alto, Cal. Mechanical Engineering, Physics.

Kary Cadmus Davis, '91, Austin, Minn. Botany, Horticulture.

Frank Albert Waugh, '91, Stillwater, O. T. Horticulture, Botany.

DAILY ROUTINE.

The routine of college duties has been maintained, with slight variation from that of past years. The increase of numbers in ironwork, from added facilities, has called for a larger proportion of work in afternoon industrials, and it is proposed hereafter to require that all male students after the fall term of the second year have their industrial training in the afternoon. The requirement of military drill from all male students below the third year has also changed the routine so far as to put the drill in the afternoon of the fall term and before chapel in the spring term for the coming year.

ATTENDANCE.

There has been a slight decrease in attendance during the past two years, the result of financial depression and the opening of the Cherokee strip. The number present in the last year is nearly 40 less than the highest number ever enrolled. It is gratifying, however, to find the falling off entirely in the lower classes, while the increased interest of the advanced students secures the largest classes in second and third years ever enrolled. The increase in the number of resident graduates is also an encouraging feature, indicating the tendency to make better preparation for the expert work in sciences now opening to specialists.

Could there be a general provision for better training in the country schools or in county high schools, this college could do a larger work for its students. If every county could establish a high school, with satisfactory courses in English, mathematics, drawing, and the elements of science in botany, physiology, and natural philosophy, the more general course in sciences and their applications given at this institution would accomplish more, and the many who cannot take the more extensive course would still have their wants partially met by the high-school course near home. Such a high school, adapted to the needs of everyday life, would be a blessing to country communities.

The average age of undergraduates has also increased, showing a disposition to make better preparation for the course before entering. The following tabular statement for the two years past shows the above facts in figures:

COURSES.	1892-'93.				1893-'94.			
	Gentlemen.	Ladies.	Total.	Av. age.	Gentlemen.	Ladies.	Total.	Av. age.
Postgraduate	14	15	29	26.01	14	11	25	26.19
Fourth year	28	15	43	22.20	25	17	42	22.89
Third year	41	25	66	21.43	43	29	72	21.15
Second year	75	35	110	19.56	86	55	141	20.20
First year	228	111	339	19.44	178	97	275	19.47
Totals	386	201	587	20.22	346	209	555	20.44

These students have come from the various counties of the state, and from other states, as shown in the tabular statements. The attendance, by counties, was as follows:

COUNTIES.	'92-3.	'93-4.	COUNTIES.	'92-3.	'93-4.
Allen .....	.....	2	Butler	3	.....
Anderson	1	2	Chase .....	.....	1
Atchison	2	1	Cherokee	2	3
Barber	1	.....	Clay	15	9
Bourbon .....	.....	3	Cloud	1	2
Brown	2	5	Coffey	1	2

ATTENDANCE BY COUNTIES—CONCLUDED.

COUNTIES.	'92-3.	'93-4.	COUNTIES.	'92-3.	'93-4.
Comanche.....	1	1	Montgomery.....		1
Cowley.....	7	1	Morris.....	11	13
Dickinson.....	4	2	Nemaha.....	11	7
Doniphan.....	3	2	Neosho.....	1	1
Douglas.....	3	1	Norton.....		1
Elk.....	1	1	Osage.....	13	11
Ellsworth.....	1	2	Osborne.....	13	13
Finney.....	2	2	Ottawa.....	8	2
Ford.....	2	1	Pawnee.....		2
Franklin.....	3	6	Phillips.....	4	5
Geary.....	10	11	Pottawatomie.....	23	27
Graham.....	1	1	Reno.....	1	
Greenwood.....	5	2	Republic.....	3	2
Harper.....	4	1	Rice.....	5	2
Harvey.....	2		Riley.....	199	215
Jackson.....	13	12	Rooks.....		2
Jefferson.....	11	10	Rush.....	4	1
Jewell.....	4	3	Russell.....	8	6
Johnson.....	10	18	Saline.....	4	4
Kingman.....	1		Scott.....	1	
Kiowa.....	2	3	Sedgwick.....	3	
Labette.....		3	Shawnee.....	25	22
Leavenworth.....	3	4	Sherman.....	3	2
Lincoln.....	4	2	Smith.....	1	
Linn.....	1	2	Sumner.....	1	6
Lyon.....	4	3	Thomas.....	1	
McPherson.....	1	2	Trego.....	1	4
Marion.....	6	5	Wabaunsee.....	19	14
Marshall.....	14	8	Washington.....	8	5
Meade.....	3	3	Wilson.....	2	3
Miami.....	1	1	Woodson.....	13	6
Mitchell.....	5	5	Wyandotte.....	7	4

The attendance from states other than Kansas was as follows:

STATES.	'92-3.	'93-4.	STATES.	'92-3.	'93-4.
California.....	1	1	Missouri.....	5	6
Canada.....		1	Nebraska.....	2	2
Colorado.....	5		New Mexico.....	1	
Germany.....	1	3	Ohio.....	2	3
Idaho.....	1		Pennsylvania.....		1
Illinois.....	2	2	South Dakota.....	1	
Indian Ter., Oklahoma.....	6	2	Switzerland.....		1
Iowa.....	1	1	Tennessee.....	1	
Michigan.....	1		Texas.....	3	2
Minnesota.....		1	Wyoming.....	1	2

Recapitulation.

1892-'93.—From 68 counties of Kansas.....	553
From 16 other states.....	34
	587
1893-'94.—From 67 counties of Kansas.....	527
From 14 other states.....	28
	555

INDUSTRIAL CLASSES REPRESENTED.

The classes of people gaining advantage of the free tuition offered at this college is shown by the following statistics, taken from the records of the secretary, made at matriculation, under the heading

Parents' Business (Undergraduates, 1893-'94).

Farmers, stock raisers, horticulturists.....	354
Mechanics.....	43
Merchants, clerks, and mercantile agents.....	50
Physicians.....	11
Ministers.....	10
Teachers.....	9
Lawyers.....	4
Civil officers.....	6
Army officers.....	3
Editors.....	2
Boarding-house keepers.....	3
Bankers and brokers.....	3
Liverymen.....	3
Laborers.....	7
Not given.....	22
Total.....	530

Since all students receive industrial training of some kind as a part of their course at college, it may be interesting to note the numbers in each of the various lines of industry. The following table presents the essential facts for the year 1894, a fair sample of many years:

INDUSTRIAL.	NUMBER ENROLLED.			
	<i>Fall.</i>	<i>Winter.</i>	<i>Spring.</i>	<i>Different students.</i>
Farm and garden.....	49	24	82	113
Wood shop.....	140	140	71	208
Iron shop.....	40	56	31	83
Printing office.....	46	83	45	99
Sewing room.....	132	74	74	172
Kitchen laboratory.....	11	51	.....	58
Dairy.....	.....	.....	39	39
Instrumental music.....	8	34	29	50

PURSUITS OF GRADUATES.

Coming, as these students do, from the homes of the industrial classes, they may be expected to carry back into similar pursuits the added influence of their training. Of those who take only a partial course, fully three-fourths of the enrollment, we have very imperfect data, from the impossibility of keeping up correspondence. Such inquiries as have been answered show that a large per cent. continue in farming and in other industries, even though temporarily employed in teaching, study, or clerical work. Of the

graduates, the annual catalogue gives full statistics, showing, for the 232 young men now living, graduated prior to 1894, the following pursuits:

Connected with agriculture.....	83 per cent.
In mechanical pursuits.....	12 "
In business life.....	15 "
Teaching in public schools.....	24 "
In professional life.....	16 "

In this connection, it must be remembered that recent graduates are found temporarily among the public-school teachers, because teaching is immediately open to graduates as a means of earning money without the use of capital, while farming requires an accumulation of means at the outset. Many of these are only awaiting the accumulation of means to engage in various industrial pursuits.

The general health at college has been excellent, a few cases of measles making the entire record of sickness. The general order has been maintained without serious discipline. The college has not entered largely into inter-collegiate contests of any kind, from the belief on the part of the faculty that the results are too costly to the general growth and development of individual students, and a serious intrusion upon the routine of an industrial college.

At the same time the physical development of young men is cared for to some extent by the regular military drill provided for all, and hereafter required of all male students below the third year in the course, unless excused by the faculty. The gymnasium has been open daily, under charge of an advanced student, subject to direction from the faculty committee on athletics. The usual field games have attracted the energy of a considerable body of students. For the young women, instruction in calisthenics has been given to volunteer classes by the assistant in sewing, Miss Bessie B. Little. The plan is to extend this instruction as soon as facilities are available.

The four literary societies have done excellent work for their members, more than half the whole body of students taking active part. The new rooms provided in the building just completed will give better facilities for such work. The Young Men's Christian Association and the Young Women's Christian Association have maintained regular weekly meetings at the college, and have exerted a wholesome influence. Delegates have attended the state conventions and the summer gathering at Geneva Lake, Wis.

THE COLUMBIAN EXHIBIT.

The college contributed to the educational exhibit of the Columbian exposition a creditable display, both in the department of liberal arts and in the Kansas building, where it secured attention and suitable awards. I am assured by authority of the chief of the department of liberal arts that not only the award for industrial work and for methods of reaching the industrial classes, but another for course of study, was intended for this college. The collective exhibit of land-grant colleges and experiment stations drew largely upon this college for its display in the agricultural building, and

three of our faculty were given responsibility in collecting and installing the exhibit. In the horticultural exhibit of Kansas, the grapes sent from our vineyards won an award for the state society, and in the agricultural exhibit of the state an award was given for a display of onions. A full report of the nature of the exhibit is contained in the report of the Kansas commission.

THE EXPERIMENT STATION COUNCIL.

As chairman of the council, composed of the professors of agriculture, horticulture, chemistry, entomology, botany, and veterinary science, I have to report that the work has gone forward without friction and with the usual efficiency. The unfortunate fact of two dry summers has diminished results of experiments in many directions, but the publications of the station have been as much sought for as ever. The bulletins and reports enumerated elsewhere have been printed under my oversight, though prepared by the several heads of departments, and issued to the public by the secretary. It is gratifying to our state pride to have the essential form of our bulletins adopted by the Association of Agricultural Colleges and Experiment Stations as the most desirable for all bulletins. The general commendation of the station work for accuracy and explicitness is proof that the station is well organized and well manned.

The new undertaking in management of irrigation experiments at Garden City and Oberlin involves various problems, which have led the council to act as a body upon it. The late date at which the work was begun, and the later date at which water could be secured, made the results of less interest than was hoped; but enough has been done to assure of fuller results next year. In connection with the work at Garden City, the members of the council have received, through Land Commissioner Frost, of the Atchison, Topeka & Santa Fé railroad, aid and encouragement, by free transportation to and from the out station. It is hoped that the board may receive from the state means for equipping and running these out stations upon a larger scale, without crippling the work already organized at the college. It is important to notice that any marked diversion of station funds to a single purpose must break up and destroy those lines of investigation which were chiefly contemplated in the act of Congress creating the station as a department of the college. As other states have done, this state can well afford to supplement the station fund by appropriation for the immediate needs of inquiry into the profit of irrigation under various circumstances. The permanence of the general station work is the chief ground of its usefulness.

PERSONAL DUTIES.

During each of the two years I have taught the fourth-year class, numbering from 40 to 45, in psychology, logic, and political economy, receiving from Professor White substantial assistance in the class work in economy. In psychology, Dewey's text-book has been supplemented by a course of lectures, and each student has been required to present a thesis upon some topic

selected with my approval. Logic has occupied the 12 weeks of the winter term, with Hill's Jevons's "Elements of Logic" as the text. For political economy, the class used Walker's text-book, with a lecture each week upon special topics, and prepared theses at the close of their course upon economic subjects assigned them for research. The work in all these directions has been creditable, though the burden of my executive duties has been too great to allow sufficient time or strength for desirable personal work with individual students.

The general care for the welfare of the body of students, assignment to duty, and personal discipline in case of need, with strictest attention to the multiplicity of wants arising in all relations, make a burden of executive duties too important to be slighted, and not easily shared with others. My oversight of college expenditures, investment of funds and general accounts has continued, as in past years. It would contribute to the welfare of the college, and to its repute outside college walls, if the president could be relieved of responsibility for details by a slight change in the laws. Absence from office routine during term time is next to impossible, in spite of the most efficient assistance.

The correspondence of the office, amounting to thousands of letters annually, has been made as easy as possible by the painstaking work of Miss Grace M. Clark, a postgraduate student, at the typewriter. The business of the office is a matter of careful record, all papers being accessible by systematic filing.

As managing editor of the *Industrialist*, I have usually furnished more or less copy each week and read the paper in proof. Of late, however, Superintendent Thompson, of the printing department, has gathered most of the news items, selected the miscellaneous matter, and made my duties as light as possible. Members of the faculty in rotation and a good body of student editors have provided editorial matter.

Of outside work in lectures and addresses, I have done but little, though invitations are always at hand. My part in the farmers' institutes and the short lecture course appears elsewhere. I have given addresses before several teachers' institutes and in two teachers' associations. In June last, two lectures at the Chautauqua assembly at Ottawa were called for. In the Association of American Agricultural Colleges and Experiment Stations, I have been called upon for papers in the meetings at New Orleans and Chicago, in the latter case speaking before the congress of agriculture in the Columbian exposition. For our state board of agriculture I have given two addresses, at the annual meetings. A greater freedom from routine duty would enable me to contribute more extensively to public interest in the college by more frequent acceptance of duty in public gatherings.

In the state board of education my duties have been increased in the past two years, from a large increase in the number of candidates for state certificates under the law of 1893. Although the board is enlarged, its duties

are so increased as to add no little to the task of examining papers presented In this I have been materially aided by other members of the faculty.

EXPENDITURES.

The classified statement below gives some idea of the nature of expenditures under my immediate oversight in the offices of president and secretary:

OFFICE:			
Postage.....	\$386 55	\$252 70	
Stationery.....	75 42	28 79	
Labor, clerks.....	764 90	680 00	
Furniture.....	6 97		
	\$1,233 84		\$961 49
CARE OF BUILDINGS:			
Janitors' wages (two men).....	\$950 00	\$950 00	
Students' wages.....	1,135 91	987 56	
Fuel.....	1,379 57	1,082 96	
Lights.....	153 43	63 16	
Implements.....	53 66	46 80	
	3,672 57		3,130 48
BUILDINGS:			
Improvements.....		\$45 32	
Repairs.....	\$1,864 24	1,022 42	
	1,864 24		1,067 74
COLLEGE:			
Furniture.....	\$447 84	101 65	
Incidentals.....	442 42	337 86	
	890 26		439 51
GROUNDS:			
Improvement.....		\$42 70	
			42 70
SUNDRIES:			
Columbian exposition.....	\$2,820 96	\$149 45	
Telephone.....	60 00	60 00	
Insurance of guns.....	11 00		
State fair.....	127 16		
American Association of Agricultural Colleges.....	72 38	34 60	
Gymnasium.....	86 62		
Regents and state board of public works, hack.....	36 00	114 16	
Water supply.....	618 40	440 43	
Farmers' institutes.....	264 01	342 12	
Columbian history.....	391 48		
Traveling expenses, Topeka, etc....	125 01	13 18	
Rent of land.....	50 00		
Commencement and diplomas.....	35 75	178 45	
Political economy lectures.....		180 73	
	4,698 77		1,513 12
Totals.....	\$12,359 68		\$7,155 04

In concluding this report, at the end of 15 years of service, during which the college has made the most substantial part of its growth in equipment, attendance, teaching force, experimental inquiry, and national repute, I cannot but acknowledge my debt of gratitude to a faculty of able supporters, and to successive boards of regents, who, by confidence and advice, have made the work easier. To yourselves, the present board, I am under obliga-

tions for similar substantial favors, in spite of all political differences. Not the least of the blessings which have come to the institution during the 15 years past has been the essential freedom from interference of political preferences in its management.

With the hope that the work of the college as herein detailed is satisfactory, this report is Respectfully submitted.

GEORGE T. FAIRCHILD, *President.*

COLLEGE, June 30, 1894.

REPORT OF THE SECRETARY.

To the Board of Regents:

GENTLEMEN—Herewith is submitted a brief report of the work in my charge for the two years ending June 30, 1894.

As your assistant secretary, my work remains much the same as in past years, except that with each succeeding year of growth of the college there comes to this office a corresponding increase of labor and responsibility.

In addition to the results of my work, as shown in the financial report of your secretary, I may add a brief statement in regard to the various books and accounts kept in this office.

A Voucher Record, in which all bills rendered against the several departments of the college are entered, with proper dates, number, and name of payee. This account is verified by cross additions every month, and closed into

The Monthly Accounts of receipts and expenditures of the income fund, the several appropriations from the state for buildings or improvements, and the data of reports from the several officers of the college and the state treasurer.

Land Ledger, showing distinct account of each sale contract, including each payment of interest and principal, shown by triplicate receipts from state treasurer.

Bond Ledger, in which, in a series of books, is shown a complete record of each bond with coupons, and of each payment, shown by triplicate receipts of the state treasurer.

Accounts with State Treasurer, showing date, number and amount of each triplicate receipt, classified as to source of income or kind of investment reduced; also date, number and amount of each warrant against either fund, and disbursements made and securities deposited. After verification with the monthly report of the state treasurer, this account is closed monthly and the results carried to the *monthly balances* account, wherein is preserved the exact condition of all funds and offices at the close of each month.

Inventory of all property of the several departments of the college in itemized detail, revised and recopied at the close of each fiscal year, a summary of which is shown in the report of your secretaries.

Department Transfers, showing exchange of value in work or materials between college departments. This account is balanced at the close of each year and closed into the department accounts.

State Appropriations Record, in which is shown, by number and amount,

all vouchers drawn against the several specific appropriation funds, and, by date and amount, the warrants drawn on the state auditor for the same.

As secretary of the faculty, my duties embrace the following: The keeping of the minutes of the regular weekly and of special faculty meetings, and the posting of actions affecting students' standing to their proper individual records in the student registers. The keeping of

The Student Registers, in which an individual record is kept, on a separate page, for each student during his connection with the college, and in which is recorded the date of entrance and of leaving, the grades obtained in each study of the course, with the term averages, all excused and unexcused absences, all special examinations, and other particulars.

The mailing of catalogues and reports of the college, and of special issues of the *Industrialist*, the reading of *Industrialist* exchanges, the noting and recording of absences of students from all general exercises, the paying of the monthly pay roll of students and men, the distribution and gathering of the daily mail for faculty and students, the keeping of the necessary supplies of stationery, etc., for the departments, the furnishing of information to students in regard to boarding places, and caring for their lost articles, the examination of candidates for admission to college after the beginning of each term, and the oversight of various special examinations and attention to an increasing correspondence are among the other duties which fall to this office.

In the work of the experiment station, the duties which fall to the secretary embrace the keeping of a voucher record, in which all bills rendered against the several departments of the station are entered, with proper dates, number, and name of payee; the keeping of the minutes of the meetings of the station council; the publication and distribution of all bulletins and annual reports issued by the station; the filing of like bulletins and reports received from other states and countries; the attending to all the general correspondence of the station, and the revision and maintenance of the list of correspondents in this and other states and countries to whom the publications of the station are sent. This list contains some 6,000 names.

During the period covered by this report, there have been mailed from this office, in addition to the large number of former publications sent out on request, the number of publications here shown:

Bulletins, 33 to 46, inclusive.....	84,000
Annual reports.....	12,000
Total.....	96,000

The enrollment in my classes in bookkeeping and commercial law, for the two years covered by this report, is here shown:

CLASSES.	1892-'93.			1893-'94.		
	Gentle- men.	Ladies.	Total.	Gentle- men.	Ladies.	Total.
Fall term						
Winter term.....	31	17	48	35	20	55
Spring term.....	14	6	20	12	8	20
Totals	45	23	68	47	28	75

The usual work which has come to me through a membership in several of the standing committees of the faculty, attendance upon farmers' institutes and other associations, and contributions to the *Industrialist*, has not varied materially from that of former years.

Respectfully submitted.

I. D. GRAHAM,

*Assistant Secretary of Board,
Secretary of Faculty,
Secretary of Experiment Station Council, and
Instructor in Bookkeeping and Commercial Law.*

COLLEGE, June 30, 1894.

DEPARTMENT REPORTS.

FARM DEPARTMENT.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of the farm department for the period from June 30, 1892, to June 30, 1894:

Class-Room Work.—There has been no change in the class-room instruction since my last report. The plan as laid down in the catalogue has been carried out, with the exception that, owing to my absence in Europe in the winter term of 1893, the instruction in agriculture, which should have been given in that term, was given in the spring term instead. Briefly stated, the plan is as follows: All class-room instruction in this department is given in two terms, namely, during the winter term (12 weeks) of the second year and the fall term (14 weeks) of the fourth year—130 hours in all.

The instruction in the second year begins with a brief course in the history of agriculture, in which the development of the art is rapidly traced from ancient times to the present. The remainder of the term has been devoted to the origin, history and characteristics of the leading breeds of cattle, horses, sheep, and swine. The aim is to acquaint the student, not only with the appearance of each of these breeds, but with their adaptation to particular situations, and especially to Kansas conditions, and their characteristics as producers of beef, milk, wool, etc., and also the history of their introduction into this country, and the extent to which they are represented here. This study is supplemented by practice in judging the breeds represented here on the farm by the scale of points adopted by the breeders' associations for their respective breeds. This class has, both years, been taught in two divisions. During the spring term of 1893, the class numbered 52 young men, and during the winter of 1894 it numbered 87.

The fourth-year instruction in agriculture occurs, as noted, in the fall term. In this term the instruction has covered (1) stock breeding, with special attention to the laws which govern the development and the improvement of live stock; (2) stock feeding on scientific principles; (3) the construction and arrangement of farm buildings; (4) brief reference to farm management, including rotation of crops, the use of manures, etc. During the fall term of 1892, there were 29 members in this class; and during the fall term of 1893, the class numbered 24. As you are aware, agriculture is given only to the young men. The instruction, in all cases, has been by lectures.

Office Work.—Aside from the work connected with the management of the department, the numerous inquiries, chiefly in connection with experimental work, sent to the department by the farmers of the state, and, indeed,

from other states as well, has given rise to a somewhat voluminous correspondence, which requires my personal attention, and no small amount of my time. The more important replies to these inquiries, which have been copied, cover nearly 2,000 pages of letter press, and probably nearly as many more have been written and not copied. Inquiries which are of general interest to farmers, I have sometimes answered through the agricultural press.

Farmers' Institutes.—I have attended about a dozen farmers' institutes in various parts of the state during the period covered by this report, and have also read papers on agricultural subjects at the meetings of the State Dairy Association and state board of agriculture.

Report on Danish Dairying.—The board of regents kindly gave me leave of absence for three months during the winter of 1893, in order that I might comply with the request of the Hon. J. M. Rusk, then secretary of agriculture, to go to Denmark, and investigate and report upon the dairy industry of that country. The report which I prepared upon my return has been published by the national department of agriculture as bulletin No. 5 of the bureau of animal industry. This investigation afforded me opportunity to enlarge my knowledge of dairying, which I trust may ere long be of practical use to the institution, if a dairy school should be established here.

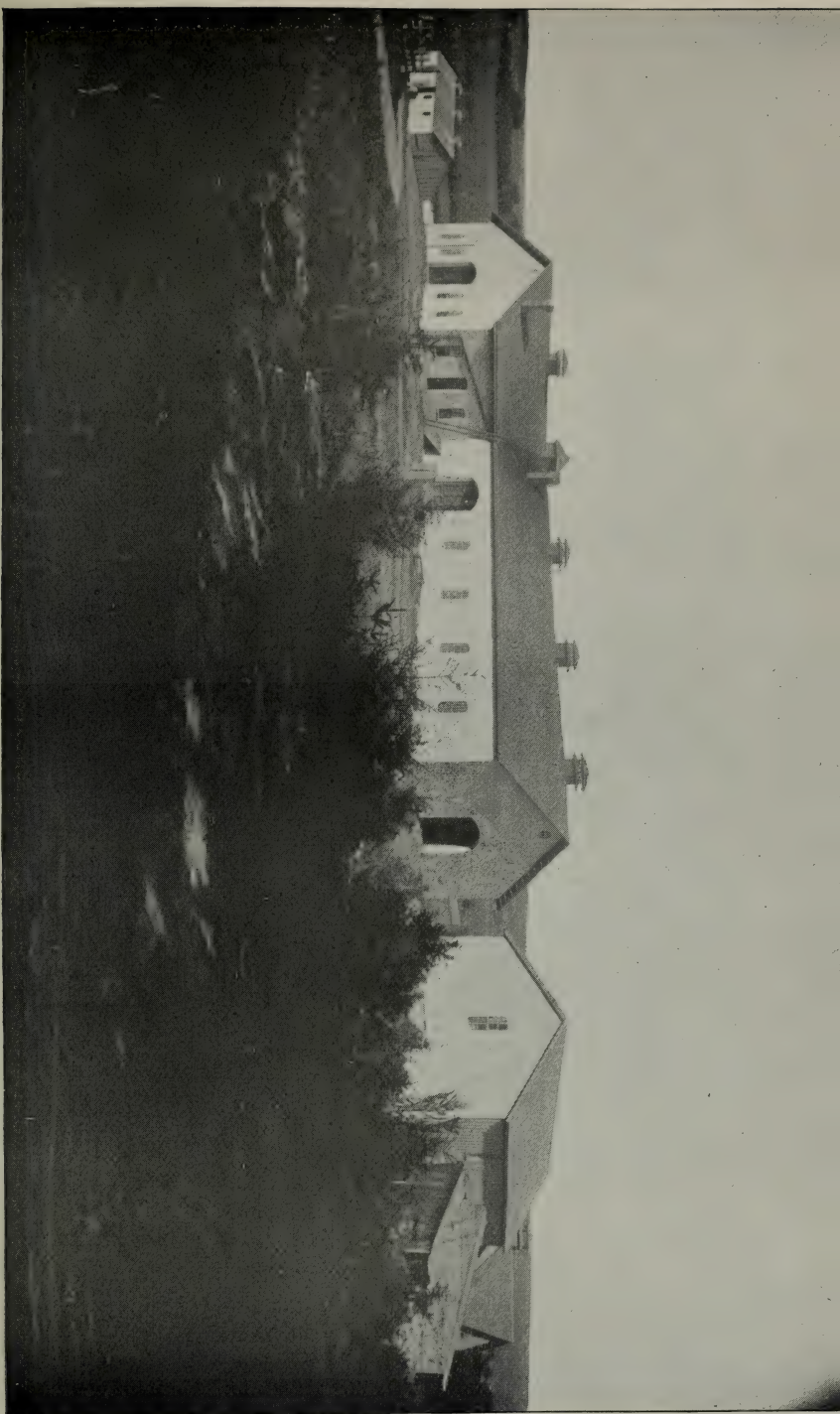
Students' Industrial Work.—The plan for industrial work on the farm, set forth in the catalogue, has been carried out during the last two years, as heretofore. This required industrial work consists of five hours' work a week by the second-year students during the 10 weeks of the spring term, and an equal amount a week during the fall term following by the same class, as third years. One-half of this time the student works on the farm, the other half in the garden. When possible, this work is made instructive, but, as a matter of fact, it is not possible for the department to provide instructive labor, in the strict sense of the term, at all times. The entire farm is devoted to experimentation, and the work of planting, cultivating and reaping must be done in the proper time, whether these processes are new or not to the particular students who report for work; and, furthermore, the vast majority of students are farmers' sons, brought up on the farm and intimately acquainted with farm work.

Owing to the large number which report for work each day, and with the growth of the institution this number will continue to grow larger, it is necessary to divide them into gangs, and put each gang at a separate kind of work. As far as practicable, there is a rotation in the work given them from day to day; but it will readily be seen that small jobs which are of an instructive nature cannot always be adjusted for all to take part. In seeding with machinery, cultivating, and other kinds of work in which the teams are employed, experimental work, on the result of which much may depend, cannot be intrusted to inexperienced students, even under an instructor. It will therefore be seen that the instructive feature of the farm work to so large classes is a most difficult problem to solve, especially since the variety of work

on a farm is not great. The work for the most part is confined to the use of hand tools among the crops, in the barn, and among the cattle. They assist in laying out, seeding and cultivating the numerous plats, and in the handling of the crops, in cutting ensilage, cutting fodder, hauling and spreading manure, in feeding cattle, and all other work of that nature. For this work, students who earn it are paid 10 cents an hour, and, in many cases, when from physical ability or other reasons they do not, on the basis of hired help, earn that amount, it has still been the rate paid by the institution for industrial work.

Farm and Experimental Work.—As already noted, the whole farm is under experimentation, and, with the exception of some feed, all that is grown on the place is under experiment of one sort or another, and the farm and experiment station are so intimately related in this department that they may best be treated together. For details of the experimental work, I would respectfully refer you to the seven bulletins which have been issued by this department in the period covered by this report, of which three are on steer feeding, two on wheat, one on corn, and one on oats. The experiments, it will readily be seen, call for much more work than would be required by ordinary business farming, and although all the work on experiments is charged to the station, there is nevertheless a loss to the farm by this arrangement, in that the farm is charged with the maintenance of fences, gates, roads, etc., and also in that it prevents the farm from making any profit on the crops raised, the receipts from the station being used to offset expenditures for station work. All the work on the farm, of whatever nature, is done by students, and the assistants and even a teamster are graduates of the college. Comparatively little of the work is done under compulsion, *i. e.*, during the periods when labor is required. Nearly all of it is done by volunteers, in the afternoons, on Saturdays, and during vacations, whenever they have any spare time. This system requires more superintendents and tools than would be needed if the work was done by a constant force of hired hands, and there is somewhat more waste of time and, in many instances, less speed in the work, all of which go to increase the expense of the work. But, on the other hand, it affords the means for many deserving students to earn part of their expenses, and they incidentally learn much which will be of value to them in after life, although they may not be aware of it at the time.

The Herd.—Five breeds of cattle are represented in the herd: Shorthorns, Herefords, Aberdeen Angus, Jerseys, and Holstein-Friesian, all of which number at present 54 head, inclusive of the young stock. It has been my constant aim to improve the herd by disposing of inferior females and retaining only the best for breeding. Each of the above-named breeds has some choice representatives in the herd. Prices for young stock have ruled low. Young bulls have ranged from \$50 to \$100, and there have been but few sales of females of the beef breeds for breeding purposes, while none of the heifers of the dairy breeds have been offered for sale. In the spring of the present



BARN AND SHEDS.

year we obtained the Shorthorn bull Golden Knight, then three years old, from Col. W. A. Harris, of Linwood, Kas., in part exchange for Craven Knight. The Hereford bull Parley has been disposed of, because of the fact that he had two fine heifers which ought to remain in the herd, and the bull Fortune 11th took his place. Later this bull was sold, and with the proceeds we bought a very promising young bull from the herd of Mr. C. S. Cross, of Emporia, Kas., sired by the famous old bull Beau Real. The Holstein bull Sylvia's Chief had likewise sired three fine heifers which ought to remain in the herd, and for this reason we made arrangements with Mr. M. E. Moore, of Cameron, Mo., to exchange him for a young bull of very excellent breeding, being a grandson of Mechthilde, the champion butter cow of the Holstein-Friesian breed. The Jersey bull College Stoke Pogis likewise has two heifers which ought to remain in the herd, and arrangements should be made to dispose of him, and as good a one as can be obtained got in his place.

Swine.—We have but two breeds—Berkshire and Poland-China—a boar and three sows of each. We have not accommodation for more than a limited number of hogs. The cheap shed piggery, which was built last fall by student labor, is not all that could be desired, and, until the state can afford better accommodations, we cannot do much in swine breeding. The boar pigs usually find ready sale. The females, on the other hand, are not much in demand, and in due course find their way to the butcher.

Sheep.—The flock of pure Shropshires, started three years ago, by purchase of an imported ram and two ewes, now numbers 12 head. A few lambs have been sold, besides. The old ram should be disposed of during the coming year, to avoid inbreeding.

Needs of the Department.—In point of development, the farm department has not kept pace with other departments of the college, for the extension of which large sums have been appropriated. I would respectfully call the attention of the board to the following points:

1. The land now rented for a period of five years, from the Williston estate, ought, in my judgment, to be purchased by the college. To do without it would cripple the department, and, if sold to other parties, the college may not be able even to rent it, and I know of no other land near the college suitable for our needs which can be obtained either by purchase or lease.

2. A farm house is greatly needed by the department, as all employés are now compelled to live in town. The disadvantage to the department which this entails has been mentioned in former reports for several years past.

3. A small sheep barn is needed. At present we are compelled to take a row of cattle stalls for the accommodation of the sheep.

4. A better piggery is needed than the one now owned by the department, which is simply a structure of the cheapest description, put together from the least-decayed lumber taken out of the old piggery, which was demolished a year ago because it could no longer hang together. In a state where hog

raising is of so much importance as it is in Kansas, the agricultural college ought, in my judgment, to have accommodation for several breeds, which should serve as object lessons for the students as well as for experiment.

5. Much of the fencing on the farm needs renewing and repairing. No appropriations have been made for this purpose of late years.

6. The roof on the barn is leaky and, if possible, it should be replaced with steel shingling, similar to that already put on other buildings of the institution.

7. The plank flooring in the cattle barn is decaying badly and ought to be put in thorough repair, or, better still, it should be replaced with flagging, vitrified brick, or some similar durable substance.

8. All exposed portions of the barn ought to be painted.

9. A new team of horses is needed. One of the horses belonging to the experiment station is practically worthless, and he has for a year or more past been able to work only half of the time, and another old horse, which has been on the farm for many years, is worn out. So, out of the six horses in the stable, two are disabled, and one is required by the herdsman, in summer, in order to see to the cattle on the upper farm. This hampers the work materially, and compels us to hire some teaming done during the busy season.

10. Some new and more efficient implements are needed than are at present owned by the department—plow, harrows, cultivators, also a fodder shredder and a manure spreader, and a windmill is needed in the Marlatt field. The large scales, both the wagon scales and the bullock scales, are no longer reliable, and should either be replaced by new ones or be put in condition to indicate weights accurately, if this is possible.

11. Finally, a dairy building and creamery, for instruction and experiment, would, in my judgment, greatly enhance the value of the institution. Kansas young men who desire to study dairying are now compelled to patronize the agricultural colleges of other states, particularly the dairy school in Iowa and that in Wisconsin, where dairy plants have been erected at a cost of \$25,000 and \$40,000 respectively. I venture the opinion that \$10,000 invested by the state in a dairy school at this college would accrue to the lasting and growing benefit of the state.

All of which is respectfully submitted.

C. C. GEORGESON,

Professor of Agriculture and Superintendent of Farm.

COLLEGE, June 30, 1894.

DEPARTMENT OF HORTICULTURE AND ENTOMOLOGY.

To the Board of Regents:

GENTLEMEN—I have the honor to present herewith a report upon the affairs in the department of horticulture and entomology, for the term of two years, ending June 30, 1894.

The work of this department is largely experimental, both horticulture and entomology being important in the organization of the experiment station. Reports of this work have been published from time to time by the station.

In class work, little variety is to be recorded from year to year. The division of the second-year classes in horticulture and entomology provides for two classes in each study in both spring and fall terms, instead of the arrangement hitherto subsisting. While this is a material relief in the reduction in size of the classes, it brings additional work to the department in doubling their number. Concurrent with this rearrangement, Mr. Mason was promoted to an assistant professorship, and given charge of the classes in horticulture. Upon these he presents a report. The classes in entomology, floriculture and specials remaining in my charge are, briefly recorded, as follows:

Entomology, fall term, 1892.....	37
Entomology, spring term, 1893.....	42
Entomology, fall term, 1893.....	43
Entomology, spring term, 1894.....	74
Floriculture, winter term, 1892-'93.....	18
Floriculture, winter term, 1893-'94.....	16
Floriculture, industrial, spring term, 1893.....	8
Greenhouse work, winter term, 1893-'94.....	3
Special entomology, one or two students each term.	

The most notable addition to the facilities of the department for several years is embodied in the range of propagating houses constructed for the instruction of the young ladies in the practical work in floriculture. Of these houses there are three, alike in construction, adjoining, and connected on the west to the experiment station propagating houses. The dimensions of each house are 12 x 70 feet; the roof a short span of one-fifth pitch, the ridge standing north and south. The roofs are of superior construction, compared with the others on the grounds, the glass in sheets of 16 x 24 inches, butted, and laid in putty. The ventilators, 12 in number in each house, are handled in sets of six by means of a lifting apparatus possessing several novel and superior features, devised by Professor Hood, of the mechanical department.

The houses are provided each with two benches 4 feet wide, 3½ feet high, the full length of the house, leaving an alley of three feet three inches in width. These benches are framed in gas pipe and angle iron, and floored with flat, fire-proof tile, and, except a six-by-two-inch plank on each edge, no wood is used in their construction. This edge plank, bolted to the angle iron, is easily replaced, and the remainder of the stage is indestructible. The alley is floored by a slatted wooden walk of two-inch plank.

Protecting the range of houses at the north is a potting room 12 x 49 feet inside, amply lighted, and provided with 48 feet of work tables or potting benches, with storage for pots and material, and with lockers for the

tools, aprons and books of each student. Ample lavatories, with hot and cold water, are provided.

To obviate the necessity of carrying heavy trays back and forth, an overhead railway, of one bar, extends through the length of the potting room, connecting, by switches, with branch lines extending to the farther end of each house, so that it is possible to transfer, upon the hanging car provided, a heavy load from the extreme end of one house to that of any other without lifting.

The new houses are heated by hot water, in wrought-iron pipes suspended by loops to the gas-pipe framework of the staging, the systems connected with the hot-water plant heating horticultural hall, the horticultural offices, and the several greenhouses. This hot-water plant, it will be seen, now does the work of two distinct systems formerly in use, and heats the three new houses in addition. Two 20-horse-power, wrought-iron, tubular boilers, in the battery, easily heat the 4,050 square feet of pipe surface, and have a capacity for 3,000 square feet more, when needed in the enlargement of the greenhouses. For the planning and construction of the extensive additions and alterations here described, acknowledgment is due Professor Hood, of the mechanical department.

The oversight of the extensive plantation which has grown up in the past 15 years under my charge has been shared with Professor Mason, who will hereafter take the responsibility, as superintendent of grounds.

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1893.

Expenditures:

Cash paid out on vouchers.....	\$4,686 44
Department bills.....	5,569 37
Total	<u>\$10,255 81</u>

Approximately distributed as follows:

Grounds.....	\$1,814 85
Orchards and gardens.....	941 72
Teams	402 50
Tools	312 56
Supplies and repairs.....	135 59
Greenhouse: Three new houses, heating plant, and refitting old houses,	5,982 44
Museum supplies and repairs.....	97 32
Office assistance, apparatus, and supplies.....	350 06
Instruction supplies.....	147 31
Students' supplies to sell again.....	71 46

Credits:

Cash paid treasurer.....	\$1,167 19
Department credits.....	320 50
Inventory increase.....	6,062 60
Balance: Cost of maintaining department, care of grounds, and permanent improvements not inventoried.....	2,705 52
Total.....	<u>\$10,255 81</u>

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1894.

Expenditures:

Cash paid on vouchers.....	\$4,137 01
Department bills.....	80 43
Total	<u>\$4,217 44</u>



STUDENTS AT WORK IN THE GARDENS.

Approximately distributed as follows :

Grounds	\$1,642 05	
Orchards and gardens	1,000 58	
Teams	392 15	
Tools	208 42	
Supplies and repairs	162 72	
Greenhouse	405 44	
Museum	27 72	
Office, including express charges not distributed	229 01	
Students' supplies	84 25	
Inventory decrease		238 29
Total expense		<u>\$4,455 73</u>

Credits :

Cash paid treasurer	\$1,036 82	
Department credits	44 08	
Balance: Cost of maintaining department, care of grounds, and permanent improvements not inventoried		3,375 63
Total		<u>\$4,455 73</u>

All of which is respectfully submitted.

E. A. POPENOE,

*Professor of Horticulture and Entomology,**Superintendent of Grounds, Orchards, and Gardens.*

COLLEGE, June 30, 1894.

To the Board of Regents:

GENTLEMEN—My work as assistant professor of horticulture began with the fall term of 1892, when the regular classes were placed in my charge. The terms which I have taught and the numbers of students enrolled are as follows: Fall term, 1892, 61; spring term, 1893, 31; fall term, 1893, 79; spring term, 1894, 30. From lack of suitable text-books on this subject, the work has been given in lectures. A brief study of plant structure and functions is followed by a discussion of the methods of plant propagation by seeds and by buds. The common operations of seed planting, making cuttings, grafting and budding are explained as fully as time permits. This is followed by the study of nursery and orchard treatment of the most common fruits. The botanical origin of our most familiar fruits, varieties best adapted to our soils and climate, gathering, packing and marketing of fruits, are all taken up in as practical a manner as possible. At the close of the fall term, about two weeks are given to the practical work of making cuttings and grafts, at the work tables.

The industrial work of the department has also been under my charge these two years, though much credit should be given to Mr. F. C. Sears, who has held the position of department foreman most creditably, and under whose constant and careful supervision the details of industrial work have been carried out. Mention should also be made of the excellence of the work done by student assistants from the third- and fourth-year classes who have been placed in charge of divisions.

The enrollment of students in the industrial work of this department is given in the following exhibit, showing the number of students taking the required and special industrial work, by terms :

TERM.	No. taking required work, half term.	No. taking special work, full term.	Totals.
Fall, 1892.....	33	8	41
Winter, 1893.....		17	17
Spring, 1893.....	50	12	62
Fall, 1893.....	36	9	45
Winter, 1894.....		20	20
Spring, 1894.....	44	16	60

The excellent equipment of tools for the use of these students, and the arrangement of the workers into divisions of four or five, under the immediate charge of advanced student assistants, have greatly increased the efficiency of the department in this line of instruction, and a corresponding increase of interest on the part of the students has been the result. The number applying for special and advanced instruction in terms not required is steadily increasing as the department becomes better equipped for furnishing such work, and we hope to make this feature of the work still more valuable in the future. A cold-storage cellar, where cuttings, scions and nursery stock could be held back till a favorable time for use, would add greatly to the efficiency of the department in this field of instruction.

With the share that I have had in farmers' institute and lecture-course work, and the division of my time with the experiment station throughout the year, I have found myself fully occupied.

Respectfully submitted.

S. C. MASON,

Assistant Professor of Horticulture.

COLLEGE, June 30, 1894.

BOTANICAL DEPARTMENT.

To the Board of Regents:

GENTLEMEN—The following table indicates the number of students taught in the botanical department during the two years ending June 30, 1894:

Year.	Term.	Subject.	Young men.	Young women.	Totals.
1892-'93.	Fall.....	Elementary botany.....	26	12	38
	".....	Special botany.....	5	4	9
	Winter...	Vegetable anatomy.....	27	16	43
	Spring...	Elementary botany, three divisions.....	91	45	136
	".....	Special botany.....	1	3	4
1893-'94.	Fall.....	Elementary botany.....	23	7	30
	".....	Special botany.....	4	5	9
	Winter...	Vegetable anatomy.....	26	17	43
	".....	Special botany.....	4	2	6
	Spring...	Elementary botany, three divisions.....	55	41	96
	".....	Special botany.....	4	4	8

The classes in special botany were composed mostly of resident postgraduates. During the spring term, 1893, the classes in elementary botany met in different class rooms, owing to the fact that the usual class room was occupied a part of the time by other classes. The first-hour class met in the chemical lecture room, the second division in the class room for botany, and the third division in class room B, in the main building. In the spring of 1894, all the divisions met in the recitation room of the department of mechanics.

During a greater part of the two years, regular courses of lectures have been given to the postgraduate students.

The herbarium has been enlarged considerably. The sum of \$300 was appropriated by the board in 1893 for this purpose. Among the items purchased may be mentioned Sydow's Uredineæ, Decades of North American Lichens, Hough's American Woods, Heller's Virginia and North Carolina Plants, about 1,500 numbers of Ellis's North American Fungi, Halsted's American Weeds, Shear's New York Fungi, Morong's Potamogetons, Egger's Missouri Plants, Howell's Oregon Plants, Kearney's Kentucky Grasses, Von Thümen's Mycotheca Universalis. Several thousand specimens have been obtained through exchange. During the summer of 1892, I traveled quite extensively over the state collecting material for the Kansas herbarium.

In addition to the general herbarium, which includes plants from all over the world, and the Kansas herbarium, containing only plants from our own state, two minor collections have been started and well advanced—a collection of seeds and fruits and a herbarium of twigs, representing woody plants in their winter condition.

Among the additions made to the botanical portion of the library, by reason of the library appropriation made in 1893, the following are the more important: De Candolle's *Prodromus*, De Candolle's *Monographiæ Phanerogamarum*, *Berichte der Deutschen Botanischen Gesellschaft* (set), Kerner's *Pflanzenleben*, Eichler's *Blüthen Diagramen*, Baillon's *Dictionaire de Botanique*, Engler and Prante's *Pflanzenfamilien*.

The working facilities of the experiment station have been added to from time to time, as demanded by the experiments in progress. We now possess means for carrying on ordinary work in bacteriology, microscopical and microtomic technique, and various other lines, except vegetable physiology. For the botanical department of the experiment station, one of the important parts of the equipment is a good library. In this line, I feel that we are much weaker than in other apparatus. During the past few years a few valuable additions have been made, such as Just's *Botanischer Jahresbericht* (set), Brefeld's *Schimmelpilze* (set), Winter's *Pilze*, Schroeter's *Pilze Schlesien*, Berlese *Icones Fungorum*. The station subscribes for the following botanical periodicals: *Zeitschrift für Pflanzenkrankheiten*, *Botanisches Centralblatt*, *Societatum Litteræ*, *Zeitschrift für Wissenschaftliche Mikroskopie*. It is hoped that complete sets of these may soon be obtained.

Mr. M. A. Carleton, who was my assistant for two years, presented his resignation in the spring of 1894, in order to accept at an increased salary a position as assistant in the department of agriculture, division of vegetable pathology. I take pleasure in saying that Mr. Carleton's work here was excellent and faithful, and that he well deserved the promotion. The vacancy caused by Mr. Carleton's resignation was filled later by the appointment of Mr. J. B. S. Norton, a member of the class of 1895, of this college. That he may be able to carry on his studies in addition to his duties as assistant, he will lengthen his course by one year. Much valuable assistance has also been rendered by Mr. J. E. Payne, a postgraduate student in agriculture and botany.

The published results of the experiment-station work, in this department, have been embodied in bulletins 38 and 46, on the "Rusts of Grain," and 41, on "The Effects of Fungicides upon the Germination of Corn." Much other work has been accomplished along various lines, but none of the experiments are yet completed. Respectfully submitted.

COLLEGE, June 30, 1894.

A. S. HITCHCOCK, *Professor of Botany.*

CHEMICAL DEPARTMENT.

To the Board of Regents:

GENTLEMEN—I have the honor to make the following report upon the work of the chemical department during the two years ending June 30, 1894:

The second-year students in inorganic chemistry have been met in the lecture room in four divisions. These classes meet every day. Professor Willard has had charge of two of the divisions and I have had charge of two. There have been four corresponding divisions for work in the practice laboratory. Each division reports for practice work twice a week. Mr. C. M. Breese has had immediate charge of the work classes.

The third-year students were assigned to agricultural chemistry in the winter term of 1892-'93 and in the fall term of 1893-'94. The usual course of lectures has been given them. Hereafter this course is to be modified. During four weeks of the fall term a course of lectures on the composition of foods and feeding stuffs and the principles of feeding will be given to the third-year students, and the course in agricultural chemistry will be completed in the spring term of the same year.

The second-year classes in organic chemistry have recited to Professor Willard as heretofore, and I have heard the recitations in mineralogy. The course in mineralogy has been the same as in previous years. Mr. Breese has had control of the classes in blowpiping.

In the spring term, I have met the fourth-year students in geology.

The classes in analytical chemistry have had work similar to that of previous years, as outlined in former reports.

The tabular statement given below shows the number of students enrolled in the classes assigned to the chemical department, and the number continuing in class through the term and taking the final examination:

TERMS.	1892-'93.		1893-'94.	
	Enrolled.	Ex- amined.	Enrolled.	Ex- amined.
<i>Fall Term.</i>				
Agricultural chemistry.....			56	54
Inorganic chemistry.....	104	93	120	114
Special students.....	5		1	
<i>Winter Term.</i>				
Agricultural chemistry.....	46	44		
Organic chemistry.....	90	84	115	112
Mineralogy.....	89	88	107	106
Special students.....	4		1	
<i>Spring Term.</i>				
Geology.....	41	42	36	36
Analytical chemistry.....	71	69	97	90
Special students.....	3		4	

A valuable addition to our equipment would be a museum or cabinet showing the character and composition of fertilizers of well-marked class of soils, and of common foods and feeding stuffs. A step in this direction has already been taken in the mineral cabinets and in the potash minerals of Stassfurt, donated to us by the German kali works. There will be some expense connected with such a museum. Especially should we procure, for the purpose of exhibition, a stock of good, clear show bottles. As soon as the board can see its way to supplying these, and meeting other expenses incidental to the collection and preparation of such a museum, the work should be begun. Its educational value, both to students and visitors, will amply repay its cost.

The department has long felt the need of a supply of hydrogen and of hydrogen sulphide, on tap. To secure these, we must have two large lead generators, connecting with the different parts of the laboratory by lead pipes. The cost of these, fully fitted up, will be considerable. When they can be procured, they will be a great convenience and a profitable investment.

In addition to my work in the college proper, a considerable portion of my time has been given to the experiment station. The chemical department of the station has been especially engaged upon sorghum and sugar beets, though analysis of feeding stuffs has received attention. Full details of this work are given in bulletins of the station. Since February last I have had much of the work of installing the irrigation plant at Garden City.

I have had my part with the other members of the faculty in the work of farmers' institutes, the *Industrialist*, public lectures, and the short course in agriculture.

Respectfully submitted.

G. H. FAILYER,

COLLEGE, June 30, 1894.

Professor of Chemistry.

To the Board of Regents:

GENTLEMEN—My time during the last two years has been divided between instruction in the college and work in the experiment station, about as during the previous year, except that I have also taught one-half the classes in inorganic chemistry. As before, I have had entire charge of the classes in organic chemistry and the immediate oversight of the special students. The latter, though few in number, have required considerable time and attention. I have also had an equal share in the instruction in analytical chemistry, both in the laboratory and the lecture room. The statistics in regard to classes are included in Professor Failyer's report, and need not be repeated here.

After two years' experience in teaching organic chemistry wholly by lectures, the difficulties of the task, with the limited time at our disposal, had not diminished, and I therefore prepared a small text-book for use in those classes. This book, being written to meet our special needs, describes much more fully than any other small book the properties of the organic compounds met with in common life, bringing out as clearly as may be the chemical relations between the various classes, but dwelling more especially on the occurrence and uses of the substances and the properties which affect their uses. I now restrict the lectures to explanations of the difficult points and performance of experiments, leaving the student to the text-book for the greater part of the facts. In this way we are able to cover more ground, and to do so much more satisfactorily.

I have borne my share of the routine work of the faculty upon the *Industrialist*, in the Friday afternoon lectures, etc., and also served, during July, 1893, as demonstrator of experiment-station work in the exhibit of the office of experiment stations at the Columbian exposition.

Very respectfully,

J. T. WILLARD,

COLLEGE, June 30, 1894.

Assistant Professor of Chemistry.

DEPARTMENT OF PHYSIOLOGY AND VETERINARY SCIENCE.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of the department of physiology and veterinary science for the two years ending June 30, 1894. In addition to the class work in veterinary science and human anatomy and physiology, I have also taught zoölogy, and have had charge of

the general museums and supervision of the athletics. The attendance in classes under my charge for the past two years has been as follows:

Year.	Term.	Class.	STUDY.	No. of students.	Divisions.	Young women.	Young men.
1892	Fall	Third year	Physiology	53	2	17	36
1893	Winter ..	Second "	"	72	2	.....	72
1893	" ..	Fourth "	Veterinary	32	1	.....	32
1893	Spring..	Second "	Physiology	43	2	32	11
1893	" ..	Fourth "	Zoölogy	44	1	15	29
1894	Winter..	" "	"	38	1	15	23
1894	" ..	" "	Veterinary science..	33	1	.....	33
1894	Spring..	Second "	Physiology	95	3	38	57
Special students in science, etc				7	.....	.....	7
" " physiology.....				2	.....	.....	2
" " zoölogy.....				1	.....	1	.....
Totals				420	.....	118	302

In conformity with the new course of study, physiology has been taught in the spring term of the second year, but will hereafter be taught in the fall term of the third year.

Instruction in veterinary science is given by lectures. It is intended to make this study as practical as possible, and it is hoped that a suitable text-book can be found to supplement the lectures, as it is impossible to cover the ground satisfactorily in the limits of 12 weeks by lectures alone.

A very fine model of an Arab horse, which was imported one year ago, has proved a very valuable acquisition as a means of illustration. Some veterinary instruments have been purchased, and serve as means of illustration as well as for use. Samples of the common drugs used in veterinary medicine have been procured for illustration. An excellent collection of animal structures, showing healthy and diseased tissues, has been made, and is being constantly added to.

Museum.—The museum has been increased by the addition of animals of all kinds, mostly from Kansas, and a few from adjoining states. Many birds and mammals have been mounted and placed on exhibition. The whole zoölogical collection has been gone over, rearranged, and relabeled. The skins of deer and elk have been mounted, and some excellent specimens of deer and elk skins donated, by Mr. W. R. McFadden, of Denver, Colo.

Gymnasium.—The effectiveness of the gymnasium has been greatly increased by the addition of poles, wall machines, dumb-bells, Indian clubs, and mattresses. Instruction in gymnastics has been given by a student assistant to all students who desired it.

Experiment Station.—A bulletin upon "*Actinomyces bovis*," or "lump jaw," with some observations upon "loco" has been issued by this department. Experiments have also been made with Texas fever, hydrophobia, and tuberculosis of cattle. Some of the cattle of the college herd have been tested with tuberculine, and I would recommend the testing of the whole

herd. An exhibit of *Actinomyces bovis*, or "lump jaw," was made in the department of experiment stations at the world's Columbian exhibition last year. I have also treated the sick animals in the farm and horticultural departments.

The increased room which will soon be available will be of great benefit to this department. Respectfully submitted. N. S. MAYO,

COLLEGE, June 30, 1894.

Professor of Physiology and Veterinary Science.

DEPARTMENT OF PHYSICS.

To the Board of Regents:

GENTLEMEN—The following table shows the class-room work done by me during the biennial period 1892-'94:

TERM.	SUBJECT.	Gentlemen.	Ladies.	Total.
Fall, 1892-'93.....	Geometry.....	19	3	22
	Physics.....	15	10	25
	Physics.....	14	4	18
Winter, 1892-'93....	Bookkeeping.....	27	17	44
	Algebra.....	26	2	28
	Bookkeeping.....	30	12	42
Spring, 1892-'93....	Physics.....	20	1	21
	Physics.....	11	14	25
Fall, 1893-'94.....	Geometry.....	11	15	26
	Physics.....	19	6	25
	Physics.....	11	11	22
Winter, 1893-'94....	Bookkeeping.....	25	16	41
	Algebra.....	16	20	36
	Geometry.....	13	15	28
Spring, 1893-'94....	Physics.....	21	11	32
	Physics.....	17	14	31

In addition to the above, I have taken the meteorological observations daily. The hour preceding recitations in physics has been given me for arrangement of apparatus for experiments. Considerable time has been spent in the shops repairing, changing and making new apparatus.

The time has come when a properly equipped physical laboratory, with suitable classroom adjoining, is a necessity.

The care and expense of the electric-bell system is borne by this department. The correction and copying of the old meteorological records was completed during the past year. To this is due the principal expense of the department. Respectfully submitted. ERNEST R. NICHOLS,

COLLEGE, June 30, 1894.

Professor of Physics.

MECHANICAL DEPARTMENT.

To the Board of Regents:

GENTLEMEN—I have the honor of submitting the following, as the report of the mechanical department for the years 1892-'93 and 1893-'94:

The two years have brought added strength in methods and equipment. In the wood shop, the 220 kits of tools were made of uniform excellence by displacing some of the very old sets and dropping them from the inventory. The removal of the printing department and heavy presses has allowed the removal of a few of the supporting posts, which have always been an inconvenience on the floor of the wood shop. It would be a great advantage to replace all the posts supporting the second floor by rods from trusses which might be put in the roof.

The total enrollment in the various classes has been as follows:

INDUSTRY.	1892-'93.				1893-'94.			
	<i>Fall.</i>	<i>Winter.</i>	<i>Spring.</i>	<i>Totals.</i>	<i>Fall.</i>	<i>Winter.</i>	<i>Spring.</i>	<i>Totals.</i>
Wood shop.....	181	153	102	436	145	142	70	357
Blacksmith shop.....	19	51	18	88	18	31	23	72
Foundry.....	6	10	8	24	10	8	.....	18
Machine shop.....	8	9	10	27	13	15	9	37
Totals.....	214	223	138	575	186	196	102	484
STUDIES.								
Mechanics.....	.....	43	.....	43	.....	69	.....	69
Engineering.....	.....	.....	25	25	.....	.....	42	42

The work in blacksmithing has been quite successful, and compared well with any shown at the Columbian exposition from similar students. The same could be said of the foundry work. The machine shop lacks some very necessary tools as yet. We should have a tool-room milling machine, a universal grinder, and a lathe of larger capacity than the 14-inch ones we have. The work done in the machine shop has been of good quality, and has been mostly on articles for the institution. The equipment has been somewhat increased by furnishing 12 more lockers with hand tools in the machine shop, by the addition of a pipe-and-bolt machine, and by building a 15-inch shaper, of excellent design and workmanship. The castings were bought of the Hendy Machine Company, with a set of drawings, also. The foreman and classes finished the machine, and it has proved of great use. I would recommend that this method of increasing the shop equipment be continued, as it furnishes excellent work for the classes.

The need of a class room has been well met by the removal of the printing department to the main building, and the furnishing of the room with seats and blackboards. The office room was also assigned to the mechanical department, giving a long-needed private office close to the work. The ar-

range of classes has been as usual. Five classes in woodwork meet in the morning each college day, a class of fourth year in woodwork two afternoons each week, also classes in blacksmithing Monday, Tuesday, Wednesday and Thursday afternoons; foundry practice Monday and Thursday afternoons, and machine-shop classes Tuesday and Wednesday afternoons. In the winter term I have met two classes in mechanics each morning, and in the spring term one class in engineering.

With much regret I received the announcement from Mr. Harrold, who for three years has been an exceptionally efficient foreman in the iron shops, that business prospects seemed much brighter outside of our shops, and that he should resign at the close of the spring term of 1894. A salary nearer commensurate with the abilities required will have to be paid, if we are to obtain and keep a good man in the place.

In the capacity of general construction and repair shops for the institution, the department's responsibilities increase from year to year. Besides the multitudinous small items, a few of larger importance may be mentioned.

During the fall and winter of 1892-'93, the hot-water heating system of the nine greenhouses was consolidated and entirely remodeled. The planning and designing of cases for the various exhibits made at the Columbian exposition naturally fell to this department. The cases and devices were built in the department shops, and were put up by me in Chicago in April and May, 1893. I was also sent to Chicago during the last days of the fair to remove our exhibits from the general chaos existing there.

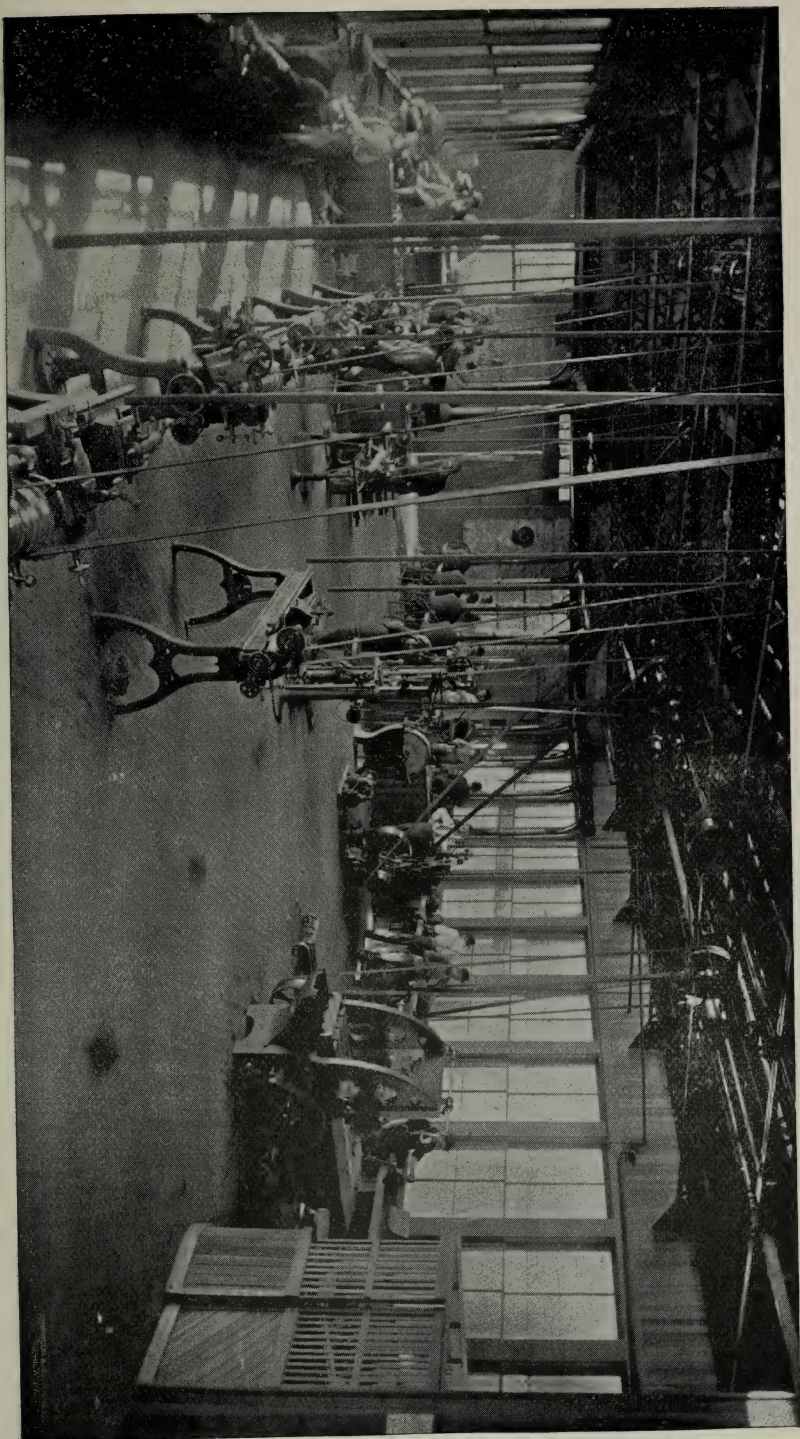
In the winter of 1892, I prepared an estimate of the expense of putting in a general steam plant.

In the spring, with the consent and under the direction of the state board of public works, I prepared complete plans and specifications of a steam plant, for heating and power purposes, for the whole institution, from data collected here, and in accordance with the needs of the institution as I had become familiar with them. I expected the work to be done during the summer vacation, and expected to superintend its construction. Owing to delay in beginning the work, and the impossibility of agreeing with engineering features suggested by the state board of public works, I resigned connection with the work, by your consent. The building was completed, largely according to the department plans, as well as the general arrangement of boilers, etc.

A rearrangement of the power plant of the institution was also planned and put in by the department. The 10-horse-power Atlas engine together with a new 50-horse-power Ball & Wood engine were placed in the new engine room, and arranged to drive a 30-kilowatt direct-current generator at 220 volts. Motors were placed as follows: In the wood shop, 12 horse power; farm barn, 10 horse power; iron shop, 8 horse power; printing office, 4 horse power. The necessary machine-shop work was done by the department.

The expenses of the last three years have been nearly alike, although, owing to an error in the department books, the expense appears less in 1891-'92

MACHINE SHOP.



and 1892-'93 than the actual amount, and in 1893-'94 it appears more than the real expense. An account of \$378.13, wrongly carried as bills receivable in the inventories of 1891-'92 and 1892-'93, makes the actual expense of the two years \$2,983.08 and \$3,175.16, respectively. This error being corrected in the inventory of 1893-'94 brings the actual expense to \$3,127.36, instead of \$3,505.49, the apparent amount.

The expenses have been, for 1892-'93, \$3,175.16, and for 1893-'94, \$3,127.36, divided about as follows:

Lumber, hardware, etc.....	\$500 00
Iron-shop supplies.....	250 00
Salaries of two foremen, engineer, and office help (nine months).....	1,800 00
Repairs on tools, engine supplies, oils, etc.....	200 00
Drawings used, stationery, etc.....	50 00
Cleaning shops.....	150 00
Old tools dropped from inventory.....	75 00
Miscellaneous.....	\$150.16 to 102 36

The department has furnished power to the printing department, without charge. The iron shops are still in need of a means of heating similar to that in other buildings. Respectfully submitted. O. P. HOOD,

*Professor of Mechanics and Engineering,
Superintendent of Shops.*

COLLEGE, June 30, 1894.

DEPARTMENT OF MATHEMATICS.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following statement, showing the enrollment of the classes in mathematics under my immediate charge during the biennial period closing June 30, 1894:

CLASSES.	1892-'93.			1893-'94.		
	Ladies.	Gentlemen.	Total.	Ladies.	Gentlemen.	Total.
<i>Fall Term.</i>						
Trigonometry and surveying.....	19	33	52	24	45	69
Algebra.....				8	20	28
Geometry, plane.....	15	32	47	7	16	23
Surveying.....	18	30	48	24	43	67
<i>Winter Term.</i>						
Solid geometry.....	17	47	64	8	16	24
Plane geometry.....	12	32	44	4	22	26
Algebra.....				22	39	61
<i>Spring Term.</i>						
Algebra.....	22	33	55	20	25	45
Solid geometry.....	8	17	25	11	20	31

All these classes, except that in surveying, recite five hours per week. In surveying, two hours per week of field practice is required, in addition to the theoretical work of the class room. The students are divided into squads of from four to seven persons, and placed under the charge of advanced student instructors. They have practice in all the ordinary operations of surveying, including leveling for section and topography. Platting is a part of the work, and each student is required to draw a large topographical map of the college farm, or other tract of land, from data obtained by the class in their field practice.

The requirements of a constantly-increasing class in surveying have taxed the equipment of the department to its utmost capacity. The equipment consists of four transits (one with solar attachment), two levels, one plane table, one compass, a farmers' drainage level, with rods, chains, tapes, and other small articles. An increase in the number of these minor items is necessary.

Besides the classes reporting directly to me for instruction, four classes per term have recited to Miss Harper, instructor in mathematics, whose efficient and careful work has added much to the strength of this department. The statement of enrollment in her classes is appended to this report. We have also had valuable assistance from Professor Nichols, of the department of physics, and from Captain Bolton, of the military department. Several postgraduate students have rendered good service in instructing classes in arithmetic.

SPECIAL CLASSES.	1892-'93.			1893-'94.		
	Ladies.	Gentlemen.	Total.	Ladies.	Gentlemen.	Total.
<i>Fall Term.</i>						
Miss Waters, arithmetic.....	19	40	59	10	32	42
Miss Cottrell, ".....				9	17	26
Captain Bolton, ".....	13	24	37			
<i>Winter Term.</i>						
Miss Cottrell, arithmetic.....				11	30	41
Miss Waters, ".....	20	49	69			
Captain Bolton, algebra.....	11	20	31			
<i>Spring Term.</i>						
Miss Waters, arithmetic.....	14	20	34			

Besides the regular duties belonging to my chair, I have given a large portion of my time to the duties of the office of librarian. I have also shared in responsibilities connected with conducting farmers' institutes, the farmers' short course, and the *Industrialist*. Respectfully submitted.

COLLEGE, June 30, 1894.

D. E. LANTZ, *Professor of Mathematics.*

To the Board of Regents:

GENTLEMEN—The following statement will show the enrollment of students in the classes under my instruction for the biennial period ending June 30, 1894:

CLASSES.	1892-'93.			1893-'94.		
	Ladies.	Gentlemen.	Total.	Ladies.	Gentlemen.	Total.
<i>Fall Term.</i>						
Algebra (four divisions).....	56	116	172	43	90	133
<i>Winter Term.</i>						
Algebra (four divisions).....	43	104	147	.....	.....	.....
Algebra (three divisions).....	.....	.....	.....	20	65	85
Plane geometry.....	.....	.....	.....	11	8	19
<i>Spring Term.</i>						
Algebra (three divisions).....	33	69	102	27	60	87
Arithmetic, advanced.....	4	7	11	4	3	7

Respectfully submitted.

JOSEPHINE C. HARPER,

COLLEGE, June 30, 1894.

Instructor in Mathematics

DEPARTMENT OF INDUSTRIAL ART AND DESIGNING.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of the department of industrial art and designing, for the biennial period ending June 30, 1894:

The enrollment for each term, by classes, will appear from this schedule:

1892-'93.

TERMS.	FREE-HAND.		MECHANICAL.				Topographical.....	Postgraduate.....	Total.....
	Pri- mary.	Ad- vanced.	First year.	Second year.	Third year.	Special.			
Fall.....	18	5	176	.....	.....	8	.....	2	210
Winter.....	* 111	11	31	* 60	.....	16	* 35	2	266
Spring.....	* 47	6	2	* 24	40	8	2	1	150
Totals.....	176	22	209	84	40	32	37	5	626

1893-'94.

Fall.....	13	10	110	.....	.....	13	.....	2	148
Winter.....	* 91	14	43	* 72	.....	21	* 70	4	315
Spring.....	* 38	9	.....	* 26	89	15	2	3	182
Totals.....	142	33	153	98	89	49	72	9	645

Of the classes marked with a *, those in primary free-hand met in regular session three times per week. On Tuesday and Thursday their attendance was not obligatory, though many students attended regularly. The second-year class in mechanical drawing was divided into several sections, each working half a term. The classes in topographical drawing consisted of third-year students, each of whom drew, under my supervision, a map, measuring 36 x 36 inches, of the college farm, as surveyed by them during the fall term, under Prof. D. E. Lantz. This work was done afternoons and Saturdays. All other classes met daily.

The classes in primary free-hand completed about 20 tablets of Walters's Free-hand Drawing, a work designed by myself for the use of these students. The advanced students in free-hand, mostly young women, drew from models, casts, and lithographs. As most of their finished plates were on exhibition in my class room during commencement, and have undoubtedly been seen by you, I will not enlarge here upon this work.

The classes in primary mechanical work completed Prang's Geometric Problems and about a dozen plates of regular curves. Two days of each week were given to geometric designing with drawing board, T-square, triangle, India ink, water color, pen, and brush. The subjects studied were tile floors, architectural ornaments, and details of stone and wood construction. The second-year students studied orthographic and isometric projection, shades and shadows, using Professor Morse's "Mechanical Drawing," Nos. 3 and 4. The third-year class studied linear perspective from the same series, Nos. 5 and 6. Two days were given to this work. On the other two days the class was divided, the young men studying problems in descriptive geometry, and the young women free-hand sketching from the object, including simple exercises in shading.

The students enumerated under "special mechanical" used a variety of text-books and books of reference, according to ability and intended vocation. Most of them worked at machine drawing from plates and from the object. Several drew sets of original designs for simple dwellings or schoolhouses, complete, with details and specifications. All of these were given a chance to learn the blue-printing process.

The postgraduate work covered a wide range of free-hand and mathematical work, supplemented by reading.

Of my work outside the class room, but directly in the interest of the college, permit me to mention a lecture before the farmers' institute at Hanover, Washington county, one before the high school of Osborne City, one before the county teachers' institute at Manhattan, and one before the county teachers' institute at Alma. I also read two papers at each of the "short courses" held at the college, and delivered a chapel lecture on "Physical Training and Health" before the students, served on four of the standing committees of the faculty, edited a weekly column of "Kansas Educational Notes" for the *Industrialist*, read all educational exchanges, and, in the fall term of

1892, prepared a "Columbian History" of 76 pages and 16 full-page engravings of the college for the biennial report to the governor. This "Columbian History" was afterward printed in a separate edition of 3,500 copies for distribution at the world's Columbian exposition, and has undoubtedly been read by you. In the winter and spring terms of 1893, I prepared, under the direction of President Fairchild, a set of floor plans, together with suggestions for the elevations, for the new library and science hall. The sketches were adopted by the state board of public works and the state architect, with but slight changes, and the finished building exhibits their character. I also served as a member of the Columbian exhibit committee, and prepared for this purpose four large water-color wall maps: one 51 x 53 inches representing the college campus; one showing the total attendance at this college, by counties, of students; one locating the farmers' institutes held during the last 12 years under the auspices of the college, and one showing, in the form of a large colored diagram, the course of study of the college. In the summer of 1893, I received a call by the board of regents of the Oklahoma Agricultural and Mechanical College to assist in locating the buildings and laying out the campus of their newly founded institution. A synopsis map of this work has since been published in the *Industrialist*. I also served as committee on landscape gardening of the State Horticultural Society, and have been elected a director of the State Historical Society.

The department is in fair working order, though the revision of the course of study of the college, last spring, has considerably increased the work of instruction, and made necessary additional means of illustration and furniture. One of the attic rooms should be seated with regular school desks. The work in descriptive geometry imperatively requires a set of models, while the additional work in draughting of the fourth-year class makes necessary considerable additional furniture, tools, and a set of machine patterns. I respectfully suggest that the state legislature be urged to provide for these needed means of instruction. The sum of \$500 would probably be sufficient to meet the most pressing needs.

I take this opportunity to speak of the assistance in my work in 1892-'93 by Miss Phoebe E. Haines, and in 1893-'94 by Mr. Arnold Emch, the former an alumnus of this college, and the latter a graduate of the cantonal college at Solothnen and the federal polytechnic school at Zurich, Switzerland. Both took postgraduate instruction in my department, with a view of fitting themselves for teaching graphics, and assisted me cheerfully and efficiently. The work of instruction has increased to such an extent, however, that more permanent assistance will have to be provided before long.

Respectfully submitted.

J. D. WALTERS,

COLLEGE, June 30, 1894.

Professor of Industrial Art and Designing.

DEPARTMENT OF ENGLISH LANGUAGE AND LITERATURE.

To the Board of Regents:

GENTLEMEN—The following report of the work in the department of English is respectfully submitted:

The studies in this department include grammar, analysis, English structure, composition, rhetoric, and literature.

Grammar, as a preparatory study, is carried throughout the year; analysis is studied in the fall term of the first college year, English structure in the winter, and composition in the spring term. We have, for the convenience of students and instructors, so divided the first-year class that half take structure and half take composition in the winter term, exchanging these studies in the spring term, thus enabling students to enter either class in either term. In the grammar classes we have had assistance from postgraduate students.

Rhetoric is studied during the winter term of the third year, and English literature during the spring term. In the fall term of the fourth year, the young ladies take a course in nineteenth-century literature.

In addition to these studies, the classes of each college year receive instruction in rhetoricals once a week. This work ranges from declamation and interpretive reading to the preparation and public delivery of original orations. For several years the rhetorical work of the first- and the fourth-year classes has been done under care of the instructors in English; but, as the work of the department increased, it was found necessary to transfer these classes to others. This transfer was made at the beginning of the last college year, when the work of the first-, the second- and the third-year classes was put in care of Mr. H. M. Jones, as instructor in rhetoricals, and that of the fourth year in care of Prof. F. H. White.

The work of the English department has been so arranged that each instructor has had four regular classes daily. The arrangement of classes, the enrollment and the division of work are shown in the following table:

BRANCHES.	1892-'93.			1893-'94.		
	<i>Gentlemen.</i>	<i>Ladies.</i>	<i>Total.</i>	<i>Gentlemen.</i>	<i>Ladies.</i>	<i>Total.</i>
<i>Fall Term.</i>						
Analysis, four divisions (Olin 3, Rupp 1)...	135	63	198	82	41	123
English literature (Olin).....		15	15	.....	18	18
Grammar (Rupp, Senn).....	74	34	108	54	26	80
Rhetoricals, first year (Rupp).....	132	62	194	.....	.....	.....
Rhetoricals, fourth year (Olin).....	27	15	42	.....	.....	.....

BRANCHES.	1892-'93.			1893-'94.		
	Gentlemen.	Ladies.	Total.	Gentlemen.	Ladies.	Total.
<i>Winter Term.</i>						
English analysis (Rupp).....	41	8	49	39	16	55
English structure (Rupp).....	68	21	89	22	13	35
Grammar (Rupp, Senn, Stokes, Horn).....	61	21	82	43	16	59
Composition (Olin).....	49	34	83	50	27	77
Rhetoric (Olin).....	33	20	53	42	27	69
Rhetoricals, first year (Rupp).....	119	60	179	.....	.....	.....
Rhetoricals, fourth year (Olin).....	27	15	42	.....	.....	.....
<i>Spring Term.</i>						
Grammar (Rupp, Senn, Stokes).....	39	19	58	29	27	56
English structure (Rupp).....	49	27	76	44	19	63
Composition (Olin).....	43	18	61	30	23	53
English literature (Olin).....	31	18	49	44	24	68
Rhetoricals, first year (Rupp).....	108	56	164	.....	.....	.....
Rhetoricals, fourth year (Olin).....	25	17	42	.....	.....	.....

In addition to class work, we have assisted in writing for the *Industrialist*, and have served upon various committees of the faculty. Each has lectured before the students in the regular lecture course, and the department has been represented at farmers' institutes, and several times at teachers' institutes and associations.

Respectfully submitted.

OSCAR E. OLIN,

Professor of English Language and Literature.

COLLEGE, June 30, 1894.

ALICE RUPP,

Instructor in English.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report concerning my work done in the rhetorical exercises during the school year 1893-'94. I have done all the rhetorical teaching for the first-, second- and third-year classes, meeting them thus:

TERM.	Class.	Divisions.
Fall	First year.....	5
	Second ".....	4
	Third ".....	2
Winter.....	First ".....	5
	Second ".....	4
	Third ".....	2
Spring	First ".....	4
	Second ".....	5
	Third ".....	3

Total attendance in my classes for the year has been:

First-year students.....	275
Second-year students.....	141
Third-year students.....	72
Total.....	488

The work of the first year has been largely declamation, with private rehearsals when the time permitted; the speaking has been varied with written work based upon the first-year English work. Throughout the year classroom discussion and criticism have been continued as an aid in overcoming the new students' diffidence.

Writing has been the main work of the second year. The first half of the year was devoted to the writing of essays, letters, paraphrases, resolutions, etc. The latter part of the winter term was given to the preparation of debates, the speakers delivering them from briefs. The effort in these debates was to discuss current questions, thus compelling the students to search the papers and magazines. In addition to the outlined debates, I have received and looked over from this class 700 carefully-written productions. The spring term has been given wholly to declamation.

During the fall term, the students of the third-year class spent much time on gesticulation, practicing the essential technical exercises; there was also some written work. The winter term was devoted to written work based on the work done under the English professor on Genung's Rhetoric, the two courses being supplemental, mine furnishing the practice on "fundamental processes." The work of the spring term has been more general in the choice of subjects, as character sketches, book reviews, critiques, etc. The written exercises of this class for the year number about 1,200. In addition to the class-room work of the third-year students, I have had charge of their public work, bringing on in chapel, before the whole college, seven division with declamations and seven with original orations. Each one of these 135 speakers has had from three to six private rehearsals. In the preparation of the orations all the assistance has been given deemed wise, my afternoons being set apart for rehearsals and conferences.

In addition to regular duties, I have served on the public exercises committee, fitted 10 speakers for the society annuals, written for the *Industrialist*, and lectured before the students. Respectfully submitted.

COLLEGE, June 30, 1894.

HOWARD M. JONES,
Rhetorical Instructor.

DEPARTMENT OF HISTORY AND POLITICAL SCIENCE.

To the Board of Regents:

GENTLEMEN—The following table presents the work done in my department during the past two years:

CLASSES.	1892-'93.				1893-'94.			
	<i>Ladies.....</i>	<i>Gentlemen...</i>	<i>Total.....</i>	<i>Divisions...</i>	<i>Ladies.....</i>	<i>Gentlemen...</i>	<i>Total.....</i>	<i>Divisions...</i>
<i>Fall Term.</i>								
General history, third year.....	22	37	59	3	21	37	58	2
United States history, first year.....					9	12	21	1
Rhetoricals, fourth year.....					18	27	45	1
Rhetoricals, third year.....	24	32	56	1				
Rhetoricals, second year.....	27	65	92	4				
<i>Winter Term.</i>								
Constitutional law, fourth year.....	12	28	40	1				
Civil gov't and political history, 3d year..					30	48	78	2
United States history, first year.....	24	29	53	1	22	34	56	1
Rhetoricals, fourth year.....					18	27	45	1
Rhetoricals, third year.....	20	24	44	1				
Rhetoricals, second year.....	24	65	89	4				
<i>Spring Term.</i>								
Political economy, fourth year.....	13	28	41	1				
Constitutional law, fourth year.....					15	24	39	1
United States history, first year.....	8	7	15	1	3	5	8	1
Rhetoricals, fourth year.....					16	25	41	1
Rhetoricals, third year.....	20	30	50	1				
Rhetoricals, second year.....	22	55	77	4				

An examination of the table will show that during the past year I have been relieved of the third-year and second-year rhetorical work and given the fourth year. As I have thus been enabled to concentrate my attention upon one class, it was possible to do better work. Topics were assigned that gave practice in the various forms of literary composition and public speaking. At intervals, the class was organized as a farmers' institute, teachers' meeting, commercial or political conventions, and appropriate duties assigned. Much interest was manifested, and improvement was apparent. Each member of the graduating class was required to prepare a thesis on some subject of his own selection. These were of such a nature as to necessitate thorough investigation, and in some cases they involved original work. Instruction in history absorbs considerable of my time. The objects kept steadily in view are familiarizing the student with the important persons and events of history and training the judgment and disciplining the mind in forming conclusions concerning them. The course in civil government and political history

grounds the student in the essential features of our government, and fixes in mind the chief events in the history of the political parties.

Last year, I conducted the recitations of the fourth-year class in political economy, President Fairchild delivering weekly lectures. This year, he taught the class and I graded the examination papers. It is my constant effort, in all my work, to present every subject in an unbiased manner, and full and free discussion is encouraged.

Several lectures have been delivered and papers read before teachers' meetings and farmers' institutes.

I am a member of the committees on grades and examinations and public exercises, and chairman of the committee on catalogue.

Respectfully, FRANCIS H. WHITE,

COLLEGE, June 30, 1894.

Professor of History and Political Science.

DEPARTMENT OF HOUSEHOLD ECONOMY AND HYGIENE.

To the Board of Regents :

GENTLEMEN—The following report of the work done in the department of household economy and hygiene during the two years ending June 30, 1894, is respectfully submitted:

During the two years past, the work done in this department has increased so much as to take all my time, and to render necessary the assistance of some postgraduate student during the winter and spring terms. The winter of 1893, Charlotte J. Short assisted me in the teaching work. She now holds the chair of domestic science in Storrs agricultural school, Connecticut. Ruth T. Stokes gave me efficient help during the winter of 1894.

The classes have increased in numbers with each year, and experience in the work opens new lines of instruction helpful to the pupils. The work of the department increases with each year's growth. The rooms are becoming too small, and, as the department has increased its work, the rooms have become inconvenient because of their position. I very sincerely hope the time is not far distant when a domestic-science hall may be built, wherein the young women may have comfortable and convenient rooms, in which they will be taught of matters pertaining to the household.

During the fall terms, my work consists of classes in industrial cooking and of directing the work of postgraduate students. A young woman who has had the term of household economy required in the second year may choose cooking as her industrial during the remainder of her course. During the fall of 1892, there were nine young women who chose this industrial. In 1893, 14 third-year girls chose cooking for an industrial. Their work consisted of canning and preserving fruit, making jellies, jams, and pickles, until the fruit season was over. The remainder of the time was spent on

learning to make fancy breads, nice cake, mince-meat, and dainty desserts. They cooked meats to some extent, and were given training in the selection of meats by having an ox cut up before the class, while every piece, with its uses, was described and explained.

Each postgraduate student takes up one subject, and works upon it until not only is the art acquired, but the history, the chemistry and the uses of that one subject are thoroughly studied. During the past two years, 14 young women have carried on postgraduate studies in this department.

During the winter terms, the regular second-year class numbered, in 1893, 27, which, with a special class of 8, made us 35 cooks in the kitchen laboratory every day. The postgraduate students were obliged to work during the afternoons, because of lack of room.

The winter of 1894 gave a regular class of 40 members and a special class of 15. We found 55 girls in the kitchen laboratory each forenoon.

These classes do regular practice work at the laboratory tables, each division cooking some article of food every day. The regular second-year class must also listen to a lecture of 50 minutes upon foods: their production, preparation for the table, serving, and the uses to which certain foods are put in the animal economy.

As in years past, the laboratory practice is so planned as to result in the Monday dinner for members of the faculty who pay for it, and they are served at table by members of the class; the Wednesday lunch, served to members of the fourth-year class; and the Friday lunch, for any students who choose to come, until the food is all eaten. The 10-cent fee charged for the lunch nearly covers the cost of materials used during this term.

We have, at stated times in the terms, a meal served for the regents and the faculty, where the postgraduate students preside at the tables and manage the table service, which is performed by members of the special class. In the fall term, this meal is a breakfast; in the winter, a five-course dinner; and in the spring, it is a tea.

During the winter, an occasional reception for the senior class gives practice in serving light refreshments, and also aids the class in acquiring habits of dainty work.

The spring term gives me the class of third-year young women in hygiene. They listen to lectures upon the subjects most closely related to their own health and well-being, and write essays upon assigned topics concerning the hygiene of homes as well as of individuals.

The second-year class of young women have training in dairying during the spring term. This year the dairy was so small and the class so large that the class had to be divided, and each division had two weeks of dairy work. The remainder of the time was devoted to cooking. The spring of 1893, the class numbered 23. The spring of 1894 found 41 in the dairy class. The greater portion of time is spent in work with butter, but two or three cheeses are made each year, while cottage cheese is made every week.

The following table will show, to some extent, the direction of expenditure as well as sources of receipts during the past two years:

ITEMS.	1892-'93.	1893-'94.
EXPENSES.		
Materials for cooking.....	\$431 63	\$347 48
New equipment.....	63 50	14 70
Paper.....	3 05	6 36
Ice.....	8 42	6 83
Repairs and express.....	3 56	3 45
Student labor.....	147 27	143 63
Milk from farm department.....	52 53	62 96
RECEIPTS.		
Lunches and dinners.....	\$328 27	\$322 59
Butter sold.....	22 00	27 20
Increase of inventory.....	40 90	4 00

During the spring and summer of 1893 we made an exhibit of our work at the World's Fair, in Chicago. This exhibit was renewed at intervals, as the materials showed deterioration. I was absent from college duties a month, by permission of the board of regents and upon request of the committee appointed to arrange the government exhibit of agricultural colleges and experiment stations, for the purpose of putting up the exhibit sent from the domestic department of the various colleges.

I have taken my share of the general college work, in farmers' institutes, upon the *Industrialist*, and in committee work.

The good work done by our graduates in domestic departments of other institutions, as well as the many letters of inquiry concerning the work of this department, inspire a hope for stronger work in the future; and the steady growth of the past gives promise of helpfulness for years to come that shall give the young women of Kansas more training in the matters which pertain to the making of homes. Respectfully submitted.

NELLIE S. KEDZIE.

COLLEGE, June 30, 1894.

Professor of Household Economy and Hygiene.

SEWING DEPARTMENT.

To the Board of Regents:

GENTLEMEN—The following report of work done in the sewing department for the two years ending June 30, 1894, is respectfully submitted. The number enrolled is as follows:

	1893.	1894.
Fall.....	121	145
Winter.....	95	104
Spring.....	109	95

Miss Ada Little, who had assisted in this department for two years, hav-

ing been employed to take charge of the sewing department of the Utah agricultural college, Miss Bessie Little was employed as assistant. The classes were larger than ever before; but, by making an afternoon class of the more advanced students and postgraduates, the work was very satisfactory.

Besides the usual class work, the girls made over 50 different garments for exhibition at the World's Fair. In making these garments, we tried to show the kinds of work done in this department; especially plain hand work, dainty stitches, exactness in putting together the different parts of a garment, machine stitching, knitting, crocheting, and making dresses.

The girls made each year over 225 dresses, and nearly 1,000 miscellaneous articles, working nearly all of their time on their own work, and furnishing their own materials. Most of the ladies in the fourth-year class made their graduating dresses.

The financial statement is as follows:

ITEMS.	1892-'93.	1893-'94.
EXPENSES.		
Materials.....	\$72 14	\$33 97
Model book.....	7 50	.....
Freight.....	45	.....
Repairs.....	2 50	6 95
Student assistant.....	.....	12 40
Department transfers.....	6 75	5 10
Inventory decrease.....	.....	5 75
Totals.....	\$89 34	\$64 17
RECEIPTS.		
Cash credits.....	\$9 00	\$12 50
Department transfers.....	5 00	3 25
Inventory increase.....	2 45	.....
Totals.....	\$16 45	\$15 75
Balance.....	72 89	48 42

The necessity for a student assistant was caused by Miss Little's employment at the fifth hour in charge of the class in calisthenics.

Respectfully submitted.

ELIDA E. WINCHIP.

COLLEGE, June 30, 1894.

Superintendent of Sewing.

PRINTING DEPARTMENT.

To the Board of Regents:

GENTLEMEN—During the biennial period just ended there have been many changes in the printing department, all of them for the better.

In August, 1893, the equipment was moved to new quarters, in the basement of the main college building. A slight change in partitions gave a composing room, a job and press room and an office separate—all good apart-

ments, well adapted to the use of a printing office. The cylinder press and large job press were placed on deep concrete foundations, adding much to the ease of running and consequent durability. These presses are driven by a four-horse-power Belknap electric motor, a very satisfactory motive power, occupying but little space, easily operated, and, during a year's use, giving no expense for repairs. This motor, together with the cable connecting it with the power house, is the property of the department by purchase.

The new outfit of body type, the purchase of which was authorized by your board, has been in use for the college year just closed, and will, I think, prove as durable as it is beautiful. The release of the old material gives the department type for beginners' use of a uniform size and in sufficient quantity for their needs, neither of which advantages they have heretofore enjoyed.

The department took part in the exhibition of the college at the Columbian exposition, aiding in displays in the liberal arts building and the Kansas building. The specimens of students' printing exhibited won favorable mention in the trade journals, and, in my opinion, compared favorably with the average display of the typographic art made at the fair.

Following is a financial statement for this department:

RECEIPTS.		1892-'93.	EXPENDITURES.	
Cash	\$335	00	Paper, ink, etc.....	\$488 36
Department bills.....	326	00	Type.....	14 14
Balance, expense.....	831	16	Labor.....	643 11
Total.....	\$1,492	16	Postage.....	47 97
			Freight.....	44 00
			Incidentals.....	18 85
			Department bills.....	4 75
			Inventory decrease.....	230 98
			Total.....	\$1,492 16

RECEIPTS.		1893-'94.	EXPENDITURES.	
Cash	\$172	71	Paper, ink, etc.....	\$673 55
Department bills.....	270	10	Type.....	363 72
Increase in inventory.....	740	54	Labor.....	731 61
Balance, expense.....	1,128	30	Postage.....	42 36
Total.....	\$2,311	65	Freight.....	56 78
			Incidentals.....	34 43
			Department bills.....	409 20
			Total.....	\$2,311 65

The large expense balance may be explained by the extra amount of paid student labor required, and the expense of moving to new quarters.

The cost of the department to the college averages about \$750 per year, all but about \$50 of this amount representing the cost of the *Industrialist*. I do not know how an equal amount could be invested to give better returns. The *Industrialist* brings the college closer to the people than any mere advertising scheme could, and its constant and persistent work for the education of the people is recognized on every side.

Respectfully submitted.

J. S. C. THOMPSON,

Superintendent of Printing.

DEPARTMENT OF MUSIC.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of the department of music, vocal and instrumental, for the years 1892-'93 and 1893-'94:

CLASSES.	1892-'93.			1893-'94.		
	Ladies.	Gentlemen.	Total.	Ladies.	Gentlemen.	Total.
<i>Fall Term.</i>						
Singing classes B (Monday and Thursday),	18	29	47	21	31	52
Singing class A (Wednesday).....	12	9	21	14	8	22
Piano and organ.....	20	5	25	31	9	40
Guitar and mandolin.....	3	2	5	1	2	3
Orchestral instruments.....	2	6	8	2	7	9
Band instruments.....		3	3	2	4	6
College orchestra.....	2	8	10	5	8	13
College cadet band.....					8	8
Totals.....	57	62	119	76	77	153
<i>Winter Term.</i>						
Singing classes B (Monday and Thursday),	6	27	33	12	24	36
Singing class A (Wednesday).....	11	28	39	19	21	40
Piano and organ.....	14	17	31	35	11	46
Guitar and mandolin.....	2	3	5	5	6	11
Orchestral instruments.....	1	11	12	4	10	14
Band instruments.....		4	4		9	9
College orchestra.....	3	9	12	4	11	15
College cadet band.....		12	12		13	13
Totals.....	37	111	148	79	105	184
<i>Spring Term.</i>						
Singing classes B (Monday and Thursday),	3	16	19	8	20	28
Singing class A (Wednesday).....	14	17	31	23	20	43
Piano and organ.....	16	8	24	42	13	55
Guitar and mandolin.....	1	2	3	7	12	19
Orchestral instruments.....	2	6	8	7	19	26
Band instruments.....		2	5	2	5	7
College orchestra.....	4	12	16	5	17	22
College cadet band.....		13	13		15	15
Totals.....	40	76	119	94	121	215

The work in the department has been similar in kind to that of past years, increased in amount however by the larger assignment of pupils to instrumental music. With the new life and enthusiasm infused into the department, resulting in part from the wise and generous action of the board at its late meeting, has come an increase in numbers and a corresponding increase in the demand for enlarged facilities.

The enrollment in the instrumental department has steadily increased, until now it is impossible to accommodate all the pupils desiring an assignment to the piano as an industrial. During the last two terms it has been

necessary to change many assignments from the piano to the guitar, mandolin, or some one of the orchestral or band instruments, for lack of accommodations for piano practice.

For efficient work, with present enrollment, the instrumental department greatly needs more room for practice, to accommodate the classes on mandolin, guitar, and orchestral instruments; also two new pianos, one to be used for practice and one for the piano class room, to enable the teacher to make a more economical and satisfactory arrangement for class instruction.

Pupils assigned to instrumental music receive weekly instruction; those who take it as an industrial are required to practice at least one period—50 minutes—per day, at the time and place assigned; those who take it as an extra are expected to practice same amount, but at time and place most convenient.

The instruction in this department includes a knowledge of the instruments and their parts; how to care for and tune the same; a correct and systematic method in technical drill; such attention to harmony, analysis and phrasing as will enable the pupil to take up advanced studies and solo work, to advantage. When the pupil is sufficiently advanced, musical composition is introduced as a part of the work, and such amount is given as is compatible with the time of the pupil.

Pupils taking vocal music are assigned to one or more of the classes which meet on Tuesday, fifth hour A. M., and on Wednesday and Thursday, at 1:30 o'clock P. M. For special occasions, quartets, octets, etc., are organized by selecting members from the above classes.

Instruction in this department, class B (elementary), includes a knowledge of the vocal instrument, how to use and care for the same; sound, illustrated by monochord, siren, and other apparatus; pitch, scale and chord relation; rhythm, accent, value, and measure; syllabic and clef notations analyzed and compared; transposition and modulation, with exercises in sight reading in both notations, by letters, numerals, syllables, and words. Class A (advanced) reviews briefly the elementary work of class B, with additional exercises in sight reading for training eye and ear, and a careful study, in style and expression, of selections, sacred and secular, interspersed with solo and quartet singing, with and without instrumental accompaniment.

Pupils who are sufficiently advanced to join the college orchestra, which has its rehearsals on Wednesday afternoons, or the college cadet band, which practices in connection with the military drill, may become members by assignment. The purpose of the above rehearsals is to secure an intelligent conception of the work to be studied, develop and cultivate the proper rhythmic feeling, and by careful drill attain the skill, unity of thought and action so essential to the proper expression of the emotion.

My duties begin with conducting the service of song at the daily morning chapel exercises. My forenoons and part of the afternoons are devoted to regular class work. As a member of the committee on public exercises and

college socials, some time has been given to the preparation of the musical parts of the several programs. I have assisted the college societies in the preparation of their music for annual exhibitions, and the fourth-year classes in the preparation of their original music for class day and commencement exercises. I have contributed to the *Industrialist*, and met all appointments in the Friday afternoon lecture course. The assistance rendered during the year 1892-'93, by Miss Maude E. Parker, and during the year 1893-'94, by Miss Lorena M. Helder, was in every way satisfactory.

The department has furnished music—vocal, piano, orchestral, and band—for the weekly course of lectures, rhetorical, college socials, the exercises of commencement day and week, the inspection ceremonies and public military parade of the college cadets, and for all the other college exercises of public and general interest. Respectfully submitted. A. B. BROWN,

COLLEGE, June 30, 1894.

Professor of Music.

MILITARY DEPARTMENT.

To the Board of Regents:

GENTLEMEN—The following report of the military department of the Kansas State Agricultural College, for the year ending June 30, 1894, is respectfully submitted:

I reported for duty as professor of military science and tactics, by direction of the President, on March 1, 1894, in accordance with the provisions of special orders No. 33, headquarters of the army, A. G. O., Washington, D. C., dated February 8, 1894, relieving Capt. E. B. Bolton, twenty-third U. S. infantry, on that date.

The records being incomplete, I will, therefore, to a great extent, be required to confine this report to my personal observations. Under the rules of the college heretofore in force, the theoretical instruction has occupied two hours per week during the winter and spring terms; the practical instruction, the same number of hours throughout the whole course. The number of male students required to attend lectures and recitations on military science was the whole number embraced under instruction for the second year's course. The number in practical instruction was uncertain, for the reason that only those desiring it were in attendance; in other words, it was optional in the course.

When I assumed the duties, but 27 students were being instructed in drill. They consisted of three detachments of about nine men each, all in a different stage of advancement. The number in theoretical (lectures and recitations) was 28. I continued in a general way the plan pursued by my predecessor.

At the beginning of the spring term, 84 reported for drill, but for various reasons 13 were dropped from the roll before commencement, June 13, 1894.

On that date, 21 were reported absent from the ceremonies. During the same term there were assigned from the second-year class for theoretical instruction 58 students, of whom six were dropped for different causes.

The instruction and drill during this term conformed as nearly as possible to the orders of the President of the United States, as promulgated in orders publishing the acts of Congress on the subject of military instruction at colleges where officers of the army are on duty.

Sighting and aiming drill was had in a small way, the facilities being so inadequate that but little results could be obtained. Target practice was also held, but only 42 cadets received instruction, for the reason that the person who owned or occupied the land where practice was held withdrew his permission for its use any longer for that purpose. In this connection, I would request that sufficient space upon the college farm be set apart for and made into a target range, and suggest a place directly north of the barn as suitable and convenient. I would also say that the uniforms now on hand are about worn out. Many new ones will be required before the next school year commences to replace those already worthless. I would therefore recommend, when another purchase is made, that a new or different style be adopted, viz., a close-fitting bodied coat of cadet grey, trousers of the same material, and the cap as now worn. I suggest, also, that the insignia of rank for all officers and noncommissioned officers be furnished by the college, for there can be no doubt but that it is part of the uniform, and I believe many of the students can ill afford to expend the money necessary therefor. I have no doubt that requiring cadets to purchase shoulder straps and chevrons prevents some from aspiring to the position of commissioned and noncommissioned officers.

I would recommend that application be made to the war department, requesting authority to return to the government the black leather belts and cartridge boxes now in use by the college, in exchange for the field or web belt in use by the cavalry arm of the service; and I further suggest, that the national flag be raised over the main building of the institution daily, from sunrise until sunset, during fair weather.

The expenditures for the department from March 1 to date were \$15.50 for labor, no money having been expended for property.

Respectfully submitted.

H. G. CAVENAUGH,

*Captain 13th United States Infantry,
Professor Military Science and Tactics.*

COLLEGE, June 30, 1894.

REPORT OF THE LIBRARIAN.

To the Board of Regents:

GENTLEMEN—I take pleasure in submitting the report of the college library for the biennial period ending June 30, 1894.

In retiring from the duties of librarian, after eight years of service, it may be well to present some statistics showing the growth of the library by bi-

ennial periods. In 1886, when I assumed general charge, the library consisted of 6,156 volumes, valued at \$8,782.74. The total library inventory was \$10,399.03. In 1888, the inventory of books and pamphlets was 10,295 volumes, valued at \$12,172.04. In 1890, there were 13,224 volumes, valued at \$16,071.94. In 1892, there were 16,029 volumes, valued at \$20,070.30. At present, the total number of books and pamphlets is 18,488, valued at \$24,978.41. The total library inventory is \$27,829.07. The bound volumes number 14,478, not counting duplicates. During these eight years, the total state appropriations for the increase of the library have been \$4,500. During the same period there have also been \$4,462.21 expended from the funds of the college for the purchase of books and periodicals. Thus it appears that with an expenditure of \$8,962.21 we have added to the library \$16,195.67 worth of books. This difference represents the value of donations received, pamphlets and periodicals bound by the state, and, to some extent, the exceptional opportunities to get valuable works at merely nominal prices.

During the past two years, the growth of the library has depended almost entirely upon the college itself. An insignificant appropriation of \$250 was made for the year ending June 30, 1893. The same amount was available for the preceding year. This sum was barely enough to pay for the periodicals for the reading room. For the year ending June 30, 1894, no state appropriation was made, nor will any fund be available for the purchase of books during the coming year. Early in 1893, the board of regents authorized the expenditure of \$3,000 from the current funds of the college for the purchase of books. With this fund, a considerable number of valuable books was bought; but the financial condition of the college did not warrant us in making the total expenditure. In all, purchases amounting to \$2,665.50 were made from the income fund during the two years. This was far from being sufficient to provide for the immediate wants of the various departments. The maximum amount allowed any department was \$350. At least a dozen of them could expend \$1,000 each, and yet not have their urgent needs supplied. It must be remembered that books are, in a large measure, the tools of an educational institution, as necessary to successful instruction as teachers or laboratories.

It is to be regretted that there is no library endowment fund, providing for a steady and substantial growth of our library. The income of the college is barely sufficient, even with the strictest economy, to provide for the instruction of the students now in attendance. It therefore becomes our duty to appeal to the legislature for appropriations for the library, just as we ask for other apparatus at the hands of the state. Like our own state university, we ought to expend at least \$5,000 a year for books. Our needs are as great as theirs, for we have been on very small allowance for many years, and our wants have accumulated. It is the unanimous opinion of our library committee that we cannot well get along with less than \$5,000 for each of the two following years. We will have absolutely nothing for book pur-

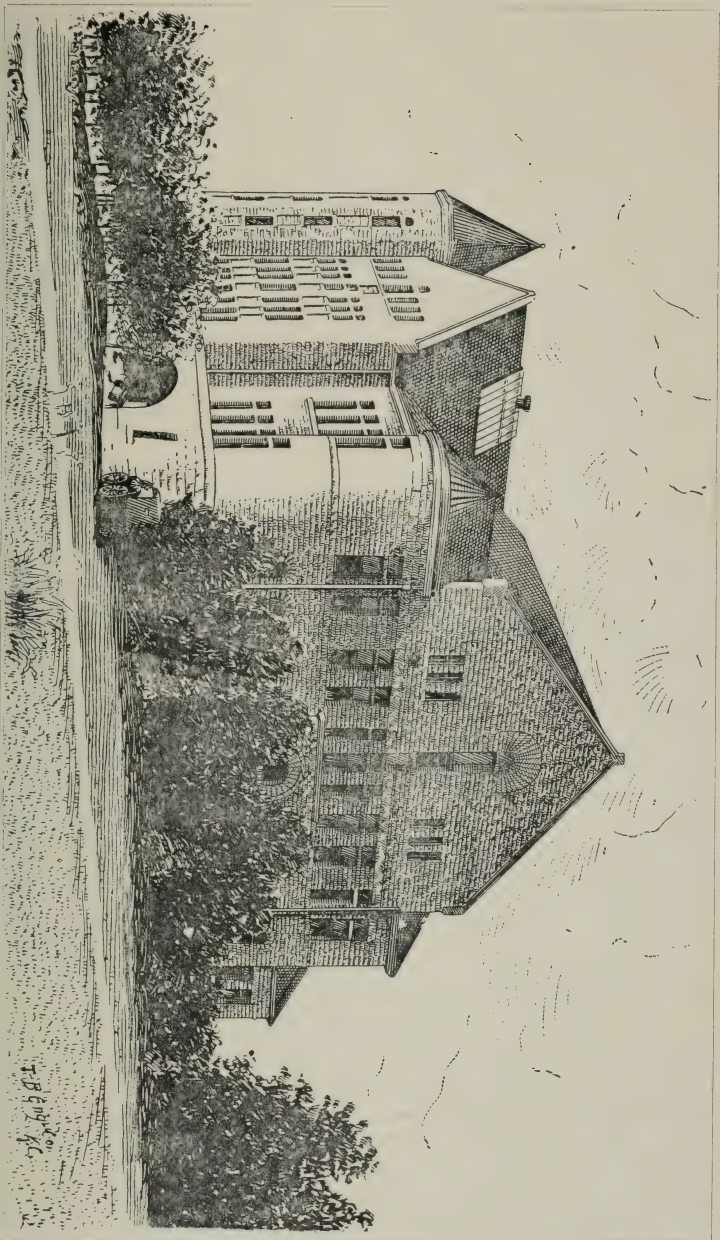
chases from any source for the year ending June 30, 1895. Our library lacks large numbers of sets of the transactions of various scientific societies, which are almost essential to our work. These transactions are becoming rarer from year to year, and, if not soon purchased, will be beyond our reach. It is largely from a consideration of this fact that I urge the board to appeal to the legislature for substantial library appropriations.

The new rooms intended for the library will be ready for use during August. The large room was especially designed to accommodate Green's patent book shelving, manufactured by the Snead & Co. iron works, of Louisville, Ky. This is the best and most convenient bookshelf now in the market. It is the same design that was selected for the new library of Congress, at Washington.

The appropriation for the new building, however, was found to be insufficient to furnish it. Shelving of the Green pattern, to accommodate about 24,000 volumes, has been purchased. The original design was intended to provide for about 70,000 volumes. The legislature should be asked for an appropriation for completing this shelving at an early date. There is also a pressing need for other library furniture. The few tables and chairs belonging to the old library are not suited to the new quarters. At least \$500 is needed to buy tables, chairs, matting, card-catalogue case, and other necessary furniture.

By the favor of the board of regents, in providing for the necessary expenses, I was enabled, during the summer of 1893, to visit a number of the larger libraries in Eastern cities and colleges, and observe methods of library management, and the styles of shelving, and various labor-saving devices in use among them. Much that was of profit was observed; and yet the conviction was constantly forced upon me that always the libraries fall short of their opportunities for good whenever the students or other users of the library are debarred from free access to the books themselves. In this respect, our library has always taken advance ground; and our new building, with all its accessories, has been planned with this permanent policy in view. Our losses during the past eight years from the abuse of the privilege of free access to the books, have been less than \$15, all told. The policy of excluding the students from the books would have required the constant employment of an additional attendant upon the library, while the advantages of the free system are beyond comparison great.

The financial statement follows. "Schedule A," appended, is a list of the principal donations received by the library during the past two years. "Schedule B" is a partial list of the periodicals on file in our reading room.



LIBRARY AND AGRICULTURAL SCIENCE HALL.

<i>Expenditures:</i>	1892-'93.	1893-'94.	Total.
Cash, state appropriation, for books.....	\$21 95	.....
“ “ “ for periodicals....	228 05	.....
Current funds, for books.....	1,398 71	\$1,266 79	
“ “ “ periodicals.....	7 50	247 40	
“ “ “ salary of assistant.....	583 34	600 00	
“ “ “ labor.....	106 72	179 01	
“ “ “ freight.....	14 06	79 32	
“ “ “ supplies.....	9 93	13 60	
“ “ “ traveling expenses.....	.....	77 70	
Totals.....	\$2,370 26	\$2,463 82	\$4,834 08
<i>Department bills:</i>			
Printing.....	7 45	11 90	
Mechanical, repairs.....	2 15	98	
Executive, postage.....	7 14	4 96	
Total.....	\$16 74	\$17 84	34 58
Total expenses.....	\$2,387 00	\$2,481 66	\$4,868 66
<i>Credits:</i>			
Cash.....	\$24 50	\$5 00	
Inventory increase.....	2,241 92	2,721 50	
Total credits.....	\$2,266 42	\$2,726 50	\$4,992 92
Balances, actual cost.....	\$120 58	.....	.....
“ “ proceeds.....	.....	\$244 84	\$124 26

Respectfully submitted.

D. E. LANTZ, *Librarian.*

COLLEGE, June 30, 1894.

SCHEDULE A.—DONATIONS TO THE LIBRARY, 1892-'94.

- From the late Hon. JOHN A. ANDERSON: Official Records, War of the Rebellion, vols. 39 to 45, 18 parts Atlases to accompany the same.
- From WILBUR ALDRICH (the author): Farming Corporations.
- From the AMERICAN MUSEUM OF NATURAL HISTORY, New York: Bulletins, vols. 3 and 4; Annual Reports, 1891, 1892, 1893.
- From EBEN BLACHLY: The Cosmopolitan, vol. 1, No. 1.
- From Capt. E. B. BOLTON, Manhattan, Kas.: Constitution, Rules and Manual of the United States Senate; Small's Legislative Handbook of Pennsylvania, 1887.
- From Hon. NELSON CASE (the author): History of Labette County, Kansas.
- From the CLEVELAND PUBLIC LIBRARY, Cleveland, Ohio: Library Catalogue.
- From H. A. DARNELL: Hickok's Mental Science.
- From the DAYTON PUBLIC LIBRARY, Dayton, Ohio.
- From Hon. JNO. DAVIS, Washington, D. C.: 9 vols. Congressional Record; 30 vols. Public Documents.
- From the author, B. O. FLOWER: Civilization's Inferno.
- From Sec. I. D. GRAHAM, Manhattan, Kas.: Contributions to North American Ethnology, vol. 7; numerous pamphlets.
- From the HARTFORD STEAM-BOILER INSPECTION COMPANY, Hartford, Conn.: The Locomotive, 14 vols., bound.
- From HARVARD UNIVERSITY: Bound catalogues and annual reports.
- From the author, F. Y. HEDLEY: Marching Through Georgia.
- From Prof. A. S. HITCHCOCK, Manhattan, Kas.: Pamphlet copies of his botanical papers.
- From Prof. NELLIE S. KEDZIE, Manhattan, Kas.: Proceedings of the American Association, vol. 38.
- From Prof. D. E. LANTZ, Manhattan, Kas.: The Statesman, vols. 6 and 7, in numbers; Queries, vols. 2, 3, 4, and 5, in numbers; Indiana School Journal, 1891.
- From the LIBRARY OF THE UNIVERSITY OF CALIFORNIA, Berkeley, Cal.

- From J. B. LIPPINCOTT & Co., Philadelphia, Pa.: Astronomy, by Sharpless and Phillips.
- From Hon. JNO. MARTIN, United States senate, Washington, D. C.: 7 vols. Public Documents.
- From F. A. MARLATT, Manhattan, Kas.: American Bee Journal, vols. 27, 28, 29, and 30, in numbers; Photo-American, vol. 4, unbound.
- From Rev. D. C. MILNER, Manhattan, Kas.: Andover Review, vols. 5 and 6, in numbers; Public Opinion, vols. 1, 3, 4, 5, 6, 7, 8, and 9, unbound.
- From the MISSOURI BOTANICAL GARDENS, St. Louis: Annual Reports, 1892, 1893, 1894.
- From H. F. NACHTRIEB: Hatch's Notes on the Birds of Minnesota.
- From the NEWBERRY PUBLIC LIBRARY, Chicago, Ill.: Proceedings of the Board of Trustees, 1887, 1888, 1889, 1890, 1891, 1892.
- From Prof. E. R. NICHOLS, Manhattan, Kas.: Norton's Natural Philosophy; Baldwin's Art of School Management; Barnes's Brief History of Greece; Philbrick's Beams and Girders; Brooks's Normal Union Arithmetic; Greenleaf's Arithmetic.
- From Hon. W. A. PEPPER, United States senate, Washington, D. C.: 5 vols. Public Documents.
- From the PENNSYLVANIA STATE LIBRARY, Harrisburg, Pa.: 22 vols. Public Documents of Pennsylvania.
- From Prof. E. A. POPENOE, Manhattan, Kas.: The Botanist; Bardwell's Arithmetic.
- From Prof. E. M. SHELTON, Brisbane, Queensland: Agriculture of Queensland, 1890-'91, 1891-'92.
- From Col. S. A. SAWYER, Manhattan, Kas.: Unbound agricultural journals, comprising many complete volumes, such as National Live Stock Journal, Field and Farm, Clark's Horse Review, Wallace's Monthly, Breeders' Gazette, Nebraska Farmer, Western Resources, etc.
- From the author, F. C. SMEDLEY, Chicago, Ill.: Kings of the Platform and Pulpit.
- From Prof. J. D. WALTERS, Manhattan, Kas.: Bulletin of the American Art Union, 151; 3 vols. German Military Tactics.
- From the author, W. M. WELCH: How to Study.
- From the author, Dr. MARTIN WILCKENS, Vienna, Austria: Nordamerikannische Landwirtschaft.
- From J. P. WINCHIP, Manhattan, Kas.: Breeders' Gazette, several unbound volumes.
- From the YOUNG MEN'S CHRISTIAN ASSOCIATION of the college: 7 volumes relating to missions and missionary work.
- From the INTERNATIONAL BUREAU OF EXCHANGES, Washington, D. C.: 12 vols. Works on Forestry, by Prof. J. C. Brown.
- From the UNITED STATES DEPARTMENT OF AGRICULTURE: Reports of the Secretary, 1891, 1892; Bureau of Animal Industry, Eighth and Ninth Annual Reports; Special Report on Cattle and Cattle Feeding, 1892; The Sheep Industry in the United States; Special Report on Texas Fevers; Album of Agricultural Statistics: Hawks and Owls of the United States; Report on Irrigation and Water Storage in the Arid Regions; North American Fauna, several numbers; United States National Herbarium; Illustrations of North American Grasses, vols. 1 and 2; Insect Life, Experiment Station Record, and Bulletins, as issued.
- From the UNITED STATES CIVIL SERVICE COMMISSION: Sixth and Seventh Annual Reports.
- From the UNITED STATES COMMISSIONER OF EDUCATION: Art and Industry, part II; Report of the Commissioner, 1889-'90; Women in Southern Education; Benjamin Franklin and the University of Pennsylvania; Higher Education in Massachusetts, Michigan, Indiana, and Ohio; Handbook of University Extension; Biological Teaching in Colleges of the United States; other circulars of information.
- From the UNITED STATES COMMISSIONER OF LABOR: Second, Third, Fourth and Fifth Special Reports; Sixth and Seventh Annual Reports.
- From the UNITED STATES COMMISSIONER OF PATENTS: Annual Reports, and Patent Office Gazette, as issued.
- From the UNITED STATES INTERSTATE COMMERCE COMMISSION: Statistics of Railroads in the United States, 1890, 1891, 1892.
- From the UNITED STATES DEPARTMENT OF THE INTERIOR: Public Documents, on deposit, eight shipments, 201 vols.; United States Coast Survey, 1891, part 2; United States Geological Survey, Eleventh and Twelfth Reports, 2 vols. each.
- From the UNITED STATES NAVAL DEPARTMENT: Nautical Almanac, 1894-'95.
- From the SMITHSONIAN INSTITUTION, Washington, D. C.: Smithsonian Reports, 1889, 1890, 1891, 1892; Proceedings of United States National Museum, 1891, 1892; Bulletins of United States National Museum, Nos. 41 and 42; Smithsonian Contributions to Knowledge, vols. 10 and 28; Smithsonian Miscellaneous Collections, vols. 34, 35, and 36; Mechanics of the Earth's Atmosphere, Cleveland Abbe.
- From the UNITED STATES DEPARTMENT OF STATE: Special Report on Commercial Relations with Central and South America; Consular Reports, vols. 37 to 42; Special Consular Reports, vols. 5, 6, 7, and 8; Index to Consular Reports, 1880 to 1885; Report on Extradition.
- From the UNITED STATES TREASURY DEPARTMENT: Report of the Comptroller of the Currency, 1892; Report of the Cruise of the Corwin, 1885; Report of the United States Superintendent of Immigration, 1892.

From the UNITED STATES-WAR DEPARTMENT: Report of Engineers, 1892-'93, 10 vols.; Report of Inspector General, 1892-'93; United States Army Register; Report of Chief of Ordnance; Report of Chief Signal Officer; Notes on Mitering Lock Gates.

From SECRETARIES OF HORTICULTURAL SOCIETIES: Massachusetts Reports for 1889, 1890, 1891, 1892; Michigan, 1890-'91; California, 1891-'92; Illinois, 1892-'93; Missouri, 1891-'93; Indiana, 1893; Kansas, vol. 11.

From STATE DEPARTMENTS OF AGRICULTURE: Massachusetts, Report for 1892; Index to Reports, 1887 to 1892; Michigan Report for 1891-'92; Virginia Report for 1888, 1890, 1891; Vermont, 1891-'92; Georgia, 1892-'93; Pennsylvania, 1892; New York, 1892; France, 1891, 1892, 1893; Labor Statistics of Minnesota, 1889-'90; Wisconsin Dairy and Food Commission Report, 1892.

From AGRICULTURAL DEPARTMENT OF OHIO: Agricultural Reports, 1880 to 1892, inclusive, 12 vols.

From the MASSACHUSETTS LABOR DEPARTMENT: Statistics of Manufactures, 1891-'92; Statistics of Labor, 1891-'92.

From various BOARDS OF HEALTH: Report of Michigan Board, 1890; Connecticut, 1891-'92; Rhode Island, 1892; Bulletins of Tennessee Board; Bulletins of New Haven Board.

From the SECRETARY OF CHEVIOT SHEEP BREEDERS' ASSOCIATION: Flock Book.

From the SECRETARY OF AMERICAN HEREFORD ASSOCIATION: American Hereford Record, vol. 12.

From KANSAS STATE OFFICERS, Topeka, Kas.: Reports, as issued.

From the HATCH EXPERIMENT STATIONS of the states: All bulletins and reports, as issued.

SCHEDULE B.

The periodicals on the following list have been on file in the reading room and library:

I.—PURCHASED.

Agora.	Garden and Forest.
Agricultural Science.	Good Housekeeping.
American Architect (international edition).	Harper's Bazaar.
American Art Printer.	Harper's Magazine.
American Chemical Journal.	Harper's Weekly.
American Engineer and Railroad Journal.	Inland Architect (photogravure edition).
American Florist.	Inland Printer.
American Garden.	Journal of the American Chemical Society.
American Journal of Mathematics.	Journal of Botany.
American Journal of Science.	Journal of the Chemical Society, London.
American Naturalist.	Journal of Comparative Medicine.
American Veterinary Review.	Journal of the Military Service Institution.
Analyst.	Journal of the Royal Agricultural Society.
Arena.	Journal of the Society of Chemical Industry.
Atlantic Monthly.	Kew Gardens Bulletin.
Auk.	Literary Journal.
Botanical Gazette.	Literary World, Boston.
British Printer.	Live Stock Journal, London.
Bulletin of the Torrey Botanical Club.	Magazine of American History.
Butterick's Delineator.	Modern Medicine and Bacteriological World.
Canadian Entomologist.	Nation.
Carpentry and Building.	Nature.
Century Magazine.	North American Review.
Chemical News.	Paper and Press.
Critic.	Philosophical Magazine.
Country Gentleman.	Political Science Quarterly.
Eclectic Magazine.	Popular Science Monthly.
Edinburg Review.	Psyche.
Education.	Publishers' Weekly.
Electrician.	Review of Reviews.
Electrical Review.	Rural New Yorker.
Engineering Magazine.	Season.
Engineering Record.	Science.
Entomological News.	Scientific American and Supplement.
Forum.	Scribner's Magazine.
Garden, London.	Table Talk.
Gardeners' Chronicle.	Veterinary Magazine.

II.—DONATED.

The Advance, Chicago.
 Breeders' Gazette, Chicago.
 Daily Capital, Topeka.
 Daily Gazette, Kansas City, Kas.
 Cosmopolitan.
 Book Reviews.
 Gazette of the United States Patent Office.
 Handicraft, Honolulu, H. I.
 Industrialist, Manhattan.
 Holstein-Friesian Register.
 Jersey Bulletin.
 Junction City Union.
 Kansas Agriculturist, Wamego.
 Kansas Farmer.

Literary News, N. Y.
 Live Stock Indicator, Kansas City, Mo.
 McPherson Democrat.
 Naturalist Leisure Hours.
 Oberlin Review, Oberlin, Ohio.
 Orange Judd Farmer, Chicago.
 Outlook, The.
 Presbyterian, Chicago.
 Smith's Fruit Farmer, Topeka.
 Union Signal, Chicago.
 Western Agriculturist, Quincy, Ill.
 Women's Column, Boston.
 Western School Journal, Topeka.

III.—INDUSTRIALIST AND EXPERIMENT STATION EXCHANGES.

Acker und Garten bau Zeitung, Milwaukee, Wis.
 Agricultural Epitomist, Indianapolis, Ind.
 Agricultural Gazette of New South Wales.
 American Agriculturist, N. Y.
 American Grange Bulletin, Cincinnati, Ohio.
 Amateur Gardening, Springfield, Mass.
 American Farm and Horticulturist, Richmond, Va.
 American Farmer, Baltimore.
 American Swineherd, Chicago.
 Baltimore Weekly Sun.
 Breeders' Gazette, Chicago.
 Canadian Live Stock Journal, Toronto.
 Cadet, The, Orono, Me.
 California Cultivator, Los Angeles.
 Colman's Rural World, St. Louis.
 Clover Leaf, South Bend, Ind.
 Home Market and Stockman, Kansas City.
 Household Companion, Toronto.
 Home, Field, and Forum, Guthrie, O. T.
 Industrial American, Lexington, Ky.
 Inter-Mountain Educator, Salt Lake City.
 Implement and Farm Journal, Kansas City.
 Irrigation Farmer, Salina, Kas.
 Journal of the Cincinnati Society of Nat'l History.
 Journal of Elisha Mitchell Society of Nat'l Hist.
 Kansas Farmer, Topeka.
 Kansas City Live Stock Indicator.
 Ladies' Home Companion.
 Live Stock Report, Chicago.
 Medical Bulletin, Philadelphia.
 Maryland Farmer, Baltimore.
 Mid-Continent, St. Louis.
 Mirror and Farmer, Manchester, N. H.
 Mayflower, The.
 National Dairyman, Kansas City.
 National Stockman and Farmer, Pittsburg.
 New England Farmer.
 New York Weekly Tribune.
 Orange Judd Farmer, Chicago.
 Our Animal Friends, New York.
 Our Dumb Animals, Boston.

Christian Alliance, N. Y.
 Christian Reformer and Dissenter, Pittsburg, Pa.
 Dairy Column, Chicago.
 Dairy World, Chicago.
 Delaware Farm and Home.
 Farm and Fireside, Philadelphia.
 Farm and Home, Springfield, Ohio.
 Farm, Field, and Fireside, Chicago.
 Farm Journal, Philadelphia.
 Farmers' Home Weekly, Dayton, Ohio.
 Farmers' Review, Chicago.
 Farm, Stock, and Home, Minneapolis, Minn.
 Grange Visitor, Lansing, Mich.
 Hospodar, Omaha.
 Hoard's Dairyman, Atkinson, Wis.
 Husbandman, Elmira, N. Y.
 Our Grange Homes, Boston.
 Proceedings Amer. Philosophical Society, Phila.
 Practical Farmer, Philadelphia.
 Rural Canadian, Toronto, Can.
 Rural Northwest, Portland, Ore.
 Santa Rosa (Cal.) Republican.
 School and Home, St. Louis.
 School of Mines Quarterly, Columbia College.
 Skordemaunen, Minneapolis, Minn.
 Southern Cultivator and Dixie Farmer.
 Southern Live Stock Journal, Starkville, Miss.
 Southern Workman.
 Standard (daily), Leavenworth, Kas.
 Traveler's Record, Hartford, Conn.
 Valley Spirit, Chambersburg.
 Vick's Magazine, Rochester, N. Y.
 Voice, New York.
 Western Agriculturist, Quincy, Ill.
 Western Rural, Chicago.
 Western Poultry Breeder, Topeka.
 Western Odd Fellow, Topeka.
 Western Plowman, Moline, Ill.
 Western Swineherd.
 Woman's Column, Boston.

[About 200 weekly newspapers from Kansas are omitted from the above list of exchanges. A number of amateur publications from various educational institutions are also omitted.]



TENTH BIENNIAL REPORT

OF THE

BOARD OF REGENTS AND FACULTY

OF THE

State Agricultural College,

LOCATED AT

MANHATTAN, KANSAS.

1895-'96.

MANHATTAN.

1896.

BOARD OF REGENTS.

- HON. S. J. STEWART (1899), *President*, . . . Humboldt, Allen county.
HON. C. E. GOODYEAR (1897), *Vice-President*, Oatville, Sedgwick county.
HON. C. B. DAUGHTERS (1898), *Treasurer*, . . Lincoln, Lincoln county.
HON. C. R. NOE (1898), *Loan Commissioner*, Leon, Butler county.
HON. C. B. HOFFMAN (1897), Enterprise, Dickinson county.
HON. C. G. BUCKLEY (1899), Scandia, Republic county.
PRES. GEO. T. FAIRCHILD (*ex officio*), *Secretary*.
I. D. GRAHAM, *Assistant Secretary*, . . . Manhattan.

KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KAS., November 10, 1896.

To his Excellency E. N. Morrill, Governor:

DEAR SIR—I transmit herewith, under the laws of the state, the Tenth Biennial Report of the Board of Regents of the Kansas State Agricultural College, including the reports of the president, professors, and other officers, for the two years ending June 30, 1896.

Respectfully yours,

GEO. T. FAIRCHILD,
Secretary Board of Regents.

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REPORT OF THE BOARD OF REGENTS.

To his Excellency E. N. Morrill, Governor of Kansas:

Sir—The Board of Regents of the Kansas State Agricultural College present, as required by law, their Tenth Biennial Report, covering the two years ending June 30, 1896. The appended reports of officers of the Board and of the College show a gratifying growth in attendance and usefulness, to which your attention is respectfully called in various particulars.

In spite of the general financial stress, the College has grown in numbers and in general advancement of students, maintaining its place as the largest of the agricultural colleges of the United States, and at the same time increasing its repute by more general recognition of the equipment of its graduates for the practical duties of life. The number of students has increased from 555 in 1893-'94 to 647 in 1895-'96, and the graduating class has increased from 37 to 66. The repute of graduates in their several callings is extended, until various institutions and manufacturing interests, as well as government departments, seek their aid in advancing similar work. This is strikingly true of the department of domestic economy, from which no less than eight graduates have gone to other states to organize and direct similar departments in other schools. Agriculture and the mechanic arts also look to this institution for experimenters and instructors. Of the 442 living graduates prior to last June, 65 are recorded as devoted to special sciences in such ways, while an equal number are engaged directly in tilling the soil, although the immediate profit of teaching in the public schools attracts the younger graduates in considerable numbers.

With this advance in the student body, the College has not been able to keep pace in the growth of the faculty and equipment, for want of means. The faculty remains essentially unchanged in strength and but slightly changed in personnel. Prof. E. R. Nichols, after a year of study in the University of Chicago, returned September 1, 1895, to the chair of physics, and Mr. H. M. Jones, instructor in rhetorical work, retired in the summer of 1895 to pursue professional study. The title of Professor Will's chair has been changed, with a view to precision, to economic science, and Professor Willard's title

has been made associate professor of chemistry. In subordinate places, Mr. H. K. Brooks, foreman of the shops, was succeeded in May, 1895, by Mr. Enos Harrold; Mr. L. A. McKeen, foreman of the farm, was succeeded, March, 1896, by Mr. Geo. Sexton; Miss Laura G. Day, assistant in sewing, was succeeded in September, 1895, by Miss Isabella R. Frisbie, B.S.; Miss Ruth Stokes, B.S., was appointed assistant in household economy in January, 1895; and Miss Lorena Clemons, B. S., was made clerk in the Secretary's office in July, 1894.

In the station force, Mr. F. W. Dunn retired December 1, 1895, and Mr. Isaac Jones, B. S., was employed in irrigation work in April, 1896. All other assistants remain at their special work, with slight changes in salary.

All officers are enumerated below, with the salary received by each, and the several funds from which salaries are paid.

	From station fund.	From annual fund.	From income fund.	Total.
BOARD OF INSTRUCTION.				
George T. Fairchild, LL. D., ¹ President, professor of logic and philosophy.....	\$300		\$2,700	\$3,000
George H. Failyer, M. S., professor of chemistry and mineralogy.....	600	\$1,400		2,000
Edwin A. Popenoe, A. M., professor of entomology and zoology.....	600	1,400		2,000
David E. Lantz, M. S., professor of mathematics.....		1,600		1,600
John D. Walters, M. S., professor of industrial art and designing.....		1,600		1,600
Ira D. Graham, A. M., Secretary, instructor in bookkeeping, Oscar E. Olin, professor of English language and literature, Mrs. Nellie S. Kedzie, M. S., professor of household economy and hygiene.....	400	1,600	1,100	1,500
Mrs. Elida E. Winchip, superintendent of sewing.....			1,600	1,600
Ozni P. Hood, M. S., professor of mechanics and engineering, superintendent of workshops.....		1,600	1,000	1,000
Alexander B. Brown, A. M., professor of music.....			1,200	1,200
John S. C. Thompson, superintendent of printing.....			1,100	1,100
Francis H. White, A. M., professor of history and political science.....			1,600	1,600
Charles C. Georgeson, M. S., ¹ professor of agriculture, superintendent of farm.....	1,200	800		2,000
Ernest R. Nichols, A. M., professor of physics.....		1,600		1,600
Nelson S. Mayo, D. V. S., M. S., professor of physiology and veterinary science.....	820	780		1,600
Julius T. Willard, M. S., associate professor of chemistry..	700	700		1,400
Albert S. Hitchcock, M. S., professor of botany.....	780	1,020		1,800
Silas C. Mason, M. S., professor of horticulture, superintendent of orchards and gardens.....	600	1,000		1,600
Miss Josephine C. Harper, instructor in mathematics.....		1,000		1,000
Miss Alice Rupp, instructor in English.....		1,000		1,000
Harry G. Cavanaugh, captain Thirteenth United States Infantry, ² professor of military science and tactics.....		1,600		1,600
Thomas E. Will, A. M., professor of political economy.....			700	700
Miss Julia R. Pearce, B. S., librarian.....				
ASSISTANTS AND FOREMEN.				
C. M. Breese, M. S., assistant in chemistry.....		1,000		1,000
Grace M. Clark, B. S., stenographer in executive office.....			420	420
Lorena E. Clemons, B. S., clerk in Secretary's office.....			300	300
Bertha Winchip, B. S., assistant in sewing (nine months).....			270	270
William Baxter, foreman of greenhouse.....			800	800
W. L. House, foreman of carpenter shop.....		800		800
Enos Harrold, foreman of iron shop.....		800		800
Geo. Sexton, foreman of farm.....		500		500
C. A. Gundaker, engineer.....			720	720
A. C. McCreary, janitor.....			800	800
Jacob Lund, M. S., fireman and steam-fitter.....			600	600

BOARD OF INSTRUCTION.	From station fund.	From annual fund.	From income fund.	Total.
ASSISTANTS IN EXPERIMENT STATION.				
F. A. Marlatt, B. S., entomology	800			800
F. C. Burtis, M. S., agriculture	800			800
D. H. Otis, B. S., agriculture	600			600
F. C. Sears, M. S., horticulture	800			800
Geo. L. Clothier, B. S., botany	480			480
Isaac Jones, B. S., irrigation (six months)	270			270
Totals	\$9,750	\$21,800	\$14,910	\$46,460

¹ With house.

² On detail from United States war department.

COURSE OF STUDY.

Slight changes have been made in the course of study by rearrangement only; but provision has been made for extending the course to five years, at the option of the student upon reaching the fourth year, by introduction of electives in the special arts and sciences represented in the general course. This enables a student to develop special talents, with mention in his diploma of such special training. This course is recognized as well adapted to its object in promoting agriculture and the mechanic arts, and the fact that it has a larger patronage than any other four years' course in the state proves it to be satisfactory to the people. Numerals denote number of class hours per week. When no work outside of class is required, italics are used. It now stands as follows:

FIRST YEAR.

Fall Term Algebra, 5.

14 weeks.

English Analysis, 5.

Botany, 5.

Free-hand Drawing, 3.

Rhetoricals, 1.

Industrial, 5.

Military Drill, 5.

Winter Term .. Algebra, 5.

12 weeks.

English Composition, 5.

Bookkeeping, one-half term, 5. Commercial Law, 1.

Geometrical Drawing, one-half term, 5.

Rhetoricals, 1.

Industrial, 5.

Military Drill, 3.

Spring Term .. Algebra, 5.

11 weeks.

English Structure, 5.

Elementary Physics, 5.

Rhetoricals, 1.

Industrial, 5.

Military Drill, 5.

SECOND YEAR.

- Fall Term** Geometry, 5.
14 weeks. Horticulture, 5.
 Inorganic Chemistry, 5. *Laboratory Work*, 2.
 Rhetoricals, 1.
Industrial, 5.
Military Drill, 5.
- Winter Term** . . Geometry, one-half term, 5.
12 weeks. Projection Drawing, one-half term, 5.
 Agriculture, for young men, 5.
 Household Economy, for young women, 5.
 Organic Chemistry, one-half term, 5.
 Mineralogy, one-half term, 5. *Laboratory Work*, 5.
 Military Science, one-half term, 2.
 Rhetoricals, 1.
Industrial, 5.
Military Drill, 3.
- Spring Term** . . Descriptive Geometry, 5.
11 weeks. Entomology, 5.
 Analytical Chemistry, 10.
 Military Science, 2.
 Rhetoricals, 1.
Industrial, 5.
Military Drill, 5.

THIRD YEAR.

- Fall Term** Trigonometry and Surveying, 5. *Surveying Practice*, 2.
14 weeks. General History, 5.
 Anatomy and Physiology, ten weeks, 5.
 Chemistry of Foods, four weeks, 5.
 Rhetoricals, 1.
Industrial, 5.
Military Drill, optional.
- Winter Term** . . Mechanics, 5.
12 weeks. Civics, 5.
 Zoölogy, 5.
Map Drawing, about 30 hours a term.
 Rhetoricals, 1.
Industrial, 5.
Military Drill, optional.
- Spring Term** . . Economic Science, 5.
11 weeks. Rhetoric, 5.
 Agricultural Chemistry, 5.
 Perspective and *Sketching*, 4.
 Rhetoricals, 1.
Industrial, 5.
Military Drill, optional.

FOURTH YEAR.

- Fall Term* Physics and Meteorology, 5.
 14 weeks. English Literature, 5.
 Agriculture, for young men, 5.
 Hygiene, for young women, 5.
 Object Drawing, 4.
 Rhetoricals, 1.
 Industrial, 5.
 Military Drill, optional.
- Winter Term* . . Physics, one-half term, 5.
 12 weeks. History of Industry and Science, one-half term, 5.
 Psychology, 5.
 Botany, 5.
 Veterinary Science, for young men, 5.
 Floriculture, for young women, 5.
 Rhetoricals, 1.
 Industrial, 5.
 Military Drill, optional.
- Spring Term* . . Geology, 5.
 11 weeks. Logic, 5.
 Engineering, for young men, 5.
 Literature, for young women, 5.
 Rhetoricals, 1.
 Industrial, 5.
 Military Drill, optional.

Students desiring additional training in special lines of study are recommended to extend the course one year. During the fourth year they will then be permitted to choose one elective and during the fifth year two electives, in place of required studies.

ELECTIVES IN EXTENDED COURSE.

A number of the studies named below must be preceded by certain other studies.

- Fall Term* Irrigation and Drainage, 2. Reference reading on Feeding.
 14 weeks. Fruit Culture, 5.
 Origin of Cultivated Fruits and Vegetables, 5.
 Vegetable Morphology and Ecology, 3.
 Vegetable Physiology, 2.
 German Botany, 2.
 General Entomology, 5.
 Systematic Entomology, 5.
 Animal Morphology, 5.
 Systematic Zoölogy, 5.
 Contagious and Infectious Diseases of Animals, 5.
 General Review of Human Anatomy, 5.
 Advanced Inorganic Chemistry, 5.
 Quantitative Chemical Analysis, 5.
 Materials of Engineering, 5.
 Applied Mechanics, 5.

Physics, 5.
 Analytical Geometry, 5.
 Heating, Ventilation, and Drainage, 5.
 History of the Nineteenth Century, 5.
 Socialism and Social Reforms, 5.
 Taxation, Tariff, Railway Transportation, 5.
 Hygiene, 5.
 Foods for the Sick, 5.

Winter Term .. Dairy Breeds and Dairying, 5.

12 weeks.

Forestry, 5.
 Greenhouse Construction and Management, 5.
 Cryptogamic Botany, 5.
 German Botany, 5.
 General Entomology, continued, 5.
 Systematic Entomology, continued, 5.
 Animal Morphology, continued. Development, 5.
 Systematic Zoölogy, special, 5.
 Theory and Practice of Veterinary Medicine, 5.
 Advanced Human Physiology, 5.
 Advanced Inorganic Chemistry, continued, 5.
 Quantitative Chemical Analysis, 5.
 Physics, 5.
 Machine Design and Hydraulics, 5.
 Differential Calculus, 5.
 Descriptive Geometry of Double-curved and Warped Surfaces, 5.
 Graphic Statics, 5.
 Comparative Politics, 5.
 Money, 5.
 Distribution, 5.
 Bread, Meats, Salads, 5.

Spring Term .. Grain and Forage Crops, 5.

11 weeks.

Maintaining Soil Fertility, 2.
 Vegetable Gardening, 5.
 Ornamental Gardening, 5.
 Systematic Botany, 3.
 Economic Botany, 3.
 German Botany, 2.
 Entomological Methods, 5.
 Economic Entomology, 5.
 Zoölogical Distribution and Evolution, 5.
 Comparative Anatomy and Physiology, 5.
 Veterinary Materia Medica, and Surgery, 5.
 Organic Chemistry, 5.
 Quantitative Chemical Analysis, 5.
 Physics, 5.
 Steam-engine Design, 5.
 Measurement of Power. *Laboratory Practice*, 5.
 Integral Calculus, 5.
 Historic Ornament, 5.
 Architectural Composition, 5.
 Constitutional Law, 5.

Banking, 5.
Principles of Sociology, 5.
General Cooking, 5.
Cake, Pastry, Dessert, 5.

THE LECTURE COURSE FOR FARMERS

Has been maintained during the last two years with such limited attendance that it has been thought best to abandon it. The farmers' institutes under the auspices of the College in some 50 different counties have been increasingly useful and interesting. A full list of them will be found in the President's report. The limited resources of the College alone prevent a much wider extension of these aids to better agriculture.

THE EXPERIMENT STATION.

The various lines of experiment for the improvement of agriculture undertaken under the act of Congress of 1887 have been continued, with good results. The annual fund of \$15,000 has been carefully expended, and accounted for to the United States department of agriculture, as provided by law. A statement of expenditures is appended to this report, although the law provides for a separate annual publication.

The details of experiments have been published in 12 bulletins and two annual reports, 8,000 copies of which have been printed and distributed, according to law. The titles of the bulletins show the general character of the investigations, and are as follows:

- No. 47, farm department, Wheat. Feeding Steers, III.
- No. 48, farm department, Six Years' Experience with Ensilage: Some Forage Plants; Renovating a Prairie Pasture.
- No. 49, veterinary department, Cattle Poisoning by Potassium Nitrate: Mastitis.
- No. 50, botanical department, Kansas Weeds, I.
- No. 51, farm department, Steer Feeding, IV.
- No. 52, botanical department, Kansas Weeds, II.
- No. 53, farm department, Pig-feeding Experiments.
- No. 54, farm department, Oats.
- No. 55, horticultural department, Small Fruits by Irrigation.
- No. 56, farm department, Corn and Kaffir-corn.
- No. 57, botanical department, Kansas Weeds, III.
- No. 58, veterinary department, Cornstalk Disease of Cattle.

The special work in irrigation undertaken at Garden City in 1894 has not proved as productive of results as was anticipated. The conditions were in many respects unfavorable to the success of the undertaking, and in view of the fact that the last legislature, by the terms of an act to promote irrigation, discouraged all experiments in farming by irrigation, this Board, after expending more than \$3,000

of funds devoted by law to experiments at the State Agricultural College, decided to abandon the plant. Recently the State Board of Irrigation having tendered the use of a promising plant at Oakley, work has been taken up there upon a moderate scale, with the hope of solving some of the economic problems which irrigation from deep wells involves, and at the same time stimulating interest in various crops suited to cultivation on the western plains.

It is hoped that a more liberal policy may be adopted in the next legislature toward this enterprise, and that a satisfactory station for irrigation experiments may be equipped and sustained. To divert the funds of the station at Manhattan is deemed by the United States department of agriculture both unlawful and unadvisable, on the ground that a division of the fund implies a decided weakening of the work. If such work is to continue, it seems wise that special provision be made by the legislature.

THE ENDOWMENT.

The endowment fund remains essentially where it was two years since, a slight addition having been made by sale of 80 acres of forfeited land and the purchase of a few bonds at a discount. It amounted, on June 30, 1896, to \$502,491.60, invested as follows:

School bonds, 10 per cent.....	\$100 00
School bonds, 7 per cent.....	16,522 41
School bonds, 6 per cent.....	142,794 51
School bonds, 5 per cent.....	700 00
Municipal bonds, 7 per cent.....	400 00
Municipal bonds, 6 per cent.....	299,145 00
Municipal bonds, 5 per cent.....	35,000 00
Notes and contracts, 10 per cent.....	3,394 47
Notes and contracts, 8 per cent.....	1,500 00
Notes and contracts, 7 per cent.....	1,400 00
Cash awaiting investment.....	1,535 21
Total.....	\$502,491 60

This shows that the interest is still diminishing by an increasing amount of 5 per cent. bonds. Much of the investment of the past two years in 6 per cent. bonds has been at rates of purchase reducing the interest in many instances to $5\frac{1}{2}$ per cent. So difficult has it been to secure good Kansas bonds that the Board has felt authorized to go outside the state, and direct the Loan Commissioner to purchase school-district bonds of old Oklahoma, east of the Rock Island railway, upon full proof of the legality of the issue, accompanied by a certificate from some local attorney chosen by the officers of the College. Under this authority bonds purchased in Oklahoma to June 30, 1896, amount to \$14,584. Judge Geo. S. Green, of Guthrie, O. T., ex-supreme court commissioner of Kansas, has so far been the attorney chosen. Most of these bonds bear 7 per cent. interest.

ANNUAL INCOME.

As might be expected from the above statement, the income of the College is gradually decreasing, so that the Board has been compelled to care for increased numbers and large advanced classes with insufficient means. To hamper the work of the College by refusing admission to the numerous applicants, or diminishing the effectiveness of the teaching by reducing salaries already lower than those of similar positions in this state or in any other state, seemed incompatible with the welfare of the state, and the only way open was to anticipate the July payments of interest by limited loans for a few months. The accounts of the Treasurer and the Secretary show an overdraft for this reason.

The total resources of the College for all purposes during the two years past have been as follows:

	1894-'95.	1895-'96.
From interest on endowment.....	\$29,390 49	\$26,988 33
From annual payment, act of congress, 1890.....	20,000 00	21,000 00
From annual appropriation, station act of congress, 1887.....	15,000 00	15,000 00
From sales, etc.....	6,992 04	9,757 78
Totals.....	\$71,382 53	\$72,746 11

The necessary current expenses of the College must exceed this amount in successive years of growth, and the state can well afford to sustain this growth. An increase of 80 students already over last year's enrollment emphasizes this need. In past years the state has borne practically no current expenses, the present property of the College being essentially equal to all the appropriations made by the state during the last 33 years. An appropriation of \$10,000 for incidental expenses of all sorts is needed for the current year, and a like amount for each of the next two fiscal years. This will relieve the College funds from immediate deficiency, and provide against deficiencies in the future.

APPROPRIATIONS.

The appropriations made by the last legislature were all carefully expended, as reported elsewhere, except one of \$250 for a new boiler. This amount was found entirely insufficient for the purpose, and it was therefore allowed to revert to the state treasury. The old boiler is still in use, and a new one of larger dimensions will be needed.

The needs of the College presented to the legislature of 1895 were but partially provided for, and the wants then presented are urged again with renewed earnestness. In several instances a small appropriation was made for the beginning of work which must be com-

pleted. In these cases the original estimate, less the amount appropriated, is again presented. The intervening two years have made these wants still more evident and important.

Most prominent among the wants then presented was a building for the department of domestic economy, including rooms for the kitchen laboratories, and sewing classes, as well as classrooms for household economy and hygiene. This College takes the lead in industrial training of young women for their home life among all the institutions of the land. Its graduates have been called to take charge of similar work in eight different states, and more are wanted. Its present accommodations are far inferior to its needs. Other states which have taken up the work in imitation of ours have provided much better equipment. This cannot be postponed with safety to college interests. Such a building with proper equipment is needed for the every-day welfare of the young women in college. The present quarters are wholly unsuitable to the work undertaken. Want of light is equally evident, and impossible of being met in any quarters available. The efficient heads of the departments of household economy and sewing have, by long and valuable services, earned a right to recognition of the importance of their work to the homes and lives of the people. The 230 young women gathered at the College annually need this improvement at once.

On the 5th of April, 1895, the residence of the President of the College, built by the state in 1885, was set on fire by lightning and completely destroyed. The propriety of rebuilding is undoubted, and the sum of \$5,000 is asked for that purpose. In the same connection, it is proper to ask that President Fairchild be reimbursed for rent actually paid while deprived of the house at the College—a house being made a part of the salary of the President from the time of his appointment.

Again attention is called to the need of growth in direction of improved agriculture by fostering the dairy interests of the state. For many years the State Dairy Association has urged the establishment of a dairy school at the State Agricultural College. Although a moderate appropriation has been asked and refused three times already, it is again presented, with the earnest hope that the state is now ready for the work. The arguments for such a school are clearly presented in a recent report of the able secretary of the State Board of Agriculture, and need not be repeated here. The estimate for building and equipment presented two years since, \$7,500, is renewed.

The constant increase of advanced classes in chemistry and physics has made evident the need of better provision for such work. So far

no facilities for laboratory work in physics have been practicable for want of suitable rooms; and yet such work is absolutely essential to a fair progress in the study. The chemical laboratory, built in 1876, at a total cost, with its equipment, of \$7,500, is outgrown. It does not accommodate the classes now present with sufficient or suitable classrooms, laboratories or cabinets, not to mention the room required for experiment station purposes. For these two departments a temporary association is feasible, in a building suited to both, and so constructed as to be a permanent and safe place for the future development of the chemical department. It ought not to cost less than \$40,000.

Other improvements are simply extensions to meet present needs in lines already settled and approved by the action of legislature in the past. It is needless to present the details or to argue their necessity, in view of the work which the College is doing for the state. The library and scientific collections are essential tools of education, which must not be suffered to grow inefficient by lagging behind the times. There are now opportunities such as may never come again for gathering fair exhibits of the animal, vegetable and mineral characteristics of the state, as well as of agricultural and horticultural developments. The College now has rooms for such collections specially provided, and moderate sums are asked for such growth. The following summary of immediate needs is presented, with the hope that careful inquiry will lead the legislature to meet them:

SUMMARY OF NEEDS.

ESTIMATES RENEWED FROM REPORT OF 1894.

Completing new metal roofs, barn.....	\$500
Trussing shop ceilings and replastering.....	300
Domestic science hall and equipment.....	20,000
Dairy house and equipment.....	7,500
Electric lights and storage battery.....	1,500
Permanent walks and drives.....	600
Cases for museums, completed.....	1,750
Extension of library stacks.....	4,500
Steam boiler, 60 horse-power.....	450
Telephone system, completed.....	150
Addition to experimental farm.....	5,000
Cold-storage plant.....	1,500
Music rooms and instruments.....	2,500
Herbarium collections, \$500 a year.....	1,000
Expense for night watchman, \$750 a year.....	1,500

ADDITIONAL ESTIMATES.

General repairs, 1897-'98.....	\$1,500
General repairs, 1898-'99.....	1,500
Repainting metal roofs.....	200
Rebuilding dwelling, destroyed by lightning.....	5,000
Chemical and physical laboratory, with equipment.....	40,000
Furniture for library.....	350
Furniture for class- and society rooms.....	500
Dressing-room in shops.....	250
Locks for shop tool-boxes.....	220

Books for library, 1897-'98	\$3,000
Books for library, 1898-'99	3,000
Farm tools and implements, \$250 a year	500
Horticultural tools and implements, \$100 a year	200
Museum collections, zoological, \$1,000 a year	2,000
Museum collections, agricultural, \$200 a year	400
Museum collections, horticultural, \$200 a year	400
Models and furniture, industrial art, \$300 a year	600
Charts and illustrations, department of English	100
Charts and illustrations, department of history	100
Uniforms, additional	1,000
Protection against fire, extinguishers and hose	300
Actual rent paid by President	360
Freight on coal, and hauling, \$1,600 a year	3,200
Water-supply, \$750 a year	1,500
Salary of Loan Commissioner, \$300 a year	600
Incidental expenses in care of funds, two years	300
Current miscellaneous expenses, 1896-'97	10,000
Current miscellaneous expenses, 1897-'98	10,000
Current miscellaneous expenses, 1898-'99	10,000

The above summary of needs is thus concisely presented, with estimates based upon the most careful scrutiny of immediate necessities, and a close calculation of the cost of each.

Respectfully submitted.

S. J. STEWART.
C. E. GOODYEAR.
C. B. DAUGHTERS.
C. R. NOE.
C. B. HOFFMAN.
C. G. BULKLEY.
G. T. FAIRCHILD.

Kansas State Agricultural College, November 10, 1896.

FINANCIAL REPORTS.

Treasurers' Reports.

To the Board of Regents:

GENTLEMEN — Herewith find my report for the period from July 1, 1894, to April 1, 1895:

INCOME ACCOUNT.

Received from state treasurer, interest.....		\$25,418 28
“ “ “ “ act of Congress, August, 1890.....		20,000 00
“ “ executive department.....		73 57
“ “ farm department.....		1,385 85
“ “ horticultural department.....		651 89
“ “ chemical department.....		4 15
“ “ mechanical department.....		1,202 99
“ “ printing department.....		61 36
“ “ botanical department.....		132 80
“ “ domestic department.....		226 39
“ “ veterinary department.....		12 44
“ “ physics department.....		13 20
Total.....		\$49,182 74
Approved vouchers due July 1, 1894.....	\$11,067 47	
“ “ presented, to April 1, 1895.....	42,323 36	
		53,390 83
Approved vouchers due April 1, 1895.....		\$4,208 09

General repairs:

APPROPRIATIONS.

Received from state auditor.....	\$999 85
Paid on approved vouchers.....	999 85
Water-supply:	
Received from state auditor.....	310 50
Paid on approved vouchers.....	310 50
Care of funds:	
Received from state auditor.....	14 00
Paid on approved vouchers.....	14 00

Respectfully submitted.

ED. SECREST, Treasurer.

MANHATTAN, April 1, 1895.

To the Board of Regents:

GENTLEMEN — Herewith find my report for the period from April 1, 1895, to June 30, 1895:

INCOME ACCOUNT.

Received from state treasurer, interest.....		\$3,143 89
“ “ executive department.....		1 80
“ “ farm department.....		1,466 47
“ “ horticultural department.....		320 39
“ “ chemical department.....		5 16
“ “ mechanical department.....		1,133 30
“ “ printing department.....		81 54
“ “ domestic department.....		160 30
“ “ botanical department.....		20 00
“ “ veterinary department.....		29 12
Total.....		\$6,971 47
Approved vouchers due April 1, 1895.....	\$4,208 09	
“ “ presented, to June 30, 1895.....	15,825 15	
		20,033 24
Approved vouchers due June 30, 1895.....		\$13,061 77

APPROPRIATIONS.

Armory steam-heat extension:	
Received from state auditor.....	\$1,999 94
Paid on approved vouchers.....	1,999 94
Water-supply:	
Received from state auditor.....	189 50
Paid on approved vouchers.....	189 50
Care of funds:	
Received from state auditor.....	115 90
Paid on approved vouchers.....	115 90

Respectfully submitted.

C. B. HOFFMAN, Treasurer.

MANHATTAN, June 30, 1895.

To the Board of Regents:

GENTLEMEN—Herewith find my report for the period from July 1, 1895, to March 31, 1896:

INCOME ACCOUNT

Received from state treasurer, interest.....	\$24,713 21
“ “ “ “ act of Congress, August, 1890.....	21,000 00
“ “ executive department.....	2 70
“ “ farm department.....	2,557 09
“ “ horticultural department.....	846 33
“ “ chemical department.....	56 19
“ “ mechanical department.....	3,464 89
“ “ printing department.....	123 21
“ “ domestic department.....	185 50
“ “ sewing department.....	20 00
“ “ botanical department.....	150 75
“ “ library department.....	1 14
“ “ military department.....	40 00
“ “ entomological department.....	36 45
Total.....	\$53,197 46
Approved vouchers due July 1, 1895.....	\$13,061 77
“ “ presented, to March 31, 1896.....	44,897 55
	57,959 32
Approved vouchers due March 31, 1896.....	\$4,761 86

APPROPRIATIONS.

Cadet uniforms:	
Received from state auditor.....	\$1,500 00
Paid on approved vouchers.....	1,500 00
Library—books:	
Received from state auditor.....	846 37
Paid on approved vouchers.....	846 37
Additions to natural history museum:	
Received from state auditor.....	200 00
Paid on approved vouchers.....	200 00
Iron shops—machinery and tools:	
Received from state auditor.....	1,000 00
Paid on approved vouchers.....	1,000 00
Wood shop—bench tops:	
Received from state auditor.....	100 00
Paid on approved vouchers.....	100 00
Farm implements:	
Received from state auditor.....	113 40
Paid on approved vouchers.....	113 40
Drawing—models and patterns:	
Received from state auditor.....	55 52
Paid on approved vouchers.....	55 52
History—charts and illustrations:	
Received from state auditor.....	38 00
Paid on approved vouchers.....	38 00

Coal — freight and hauling:	
Received from state auditor.....	\$1,476 85
Paid on approved vouchers.....	1,476 85
Water-supply:	
Received from state auditor.....	334 59
Paid on approved vouchers.....	334 59
Salary of Loan Commissioner:	
Received from state auditor.....	175 00
Paid on approved vouchers.....	175 00
Care of funds:	
Received from state auditor.....	58 62
Paid on approved vouchers.....	58 62
General repairs:	
Received from state auditor.....	880 38
Paid on approved vouchers.....	880 38
New roofs:	
Received from state auditor.....	1,000 00
Paid on approved vouchers.....	1,000 00
Painting roofs:	
Received from state auditor.....	150 00
Paid on approved vouchers.....	150 00
New floors:	
Received from state auditor.....	606 19
Paid on approved vouchers.....	606 19
New dwelling:	
Received from state auditor.....	750 00
Paid on approved vouchers.....	750 00
Improvement of grounds:	
Received from state auditor.....	500 00
Paid on approved vouchers.....	500 00
Museum cases:	
Received from state auditor.....	2,000 00
Paid on approved vouchers.....	2,000 00
Library furniture:	
Received from state auditor.....	457 27
Paid on approved vouchers.....	457 27
Furniture in offices, classrooms, society rooms:	
Received from state auditor.....	300 00
Paid on approved vouchers.....	300 00
Inside blinds:	
Received from state auditor.....	747 03
Paid on approved vouchers.....	747 03
Extension of sewer and silt basin:	
Received from state auditor.....	125 00
Paid on approved vouchers.....	125 00
Pumps and pump pit:	
Received from state auditor.....	345 00
Paid on approved vouchers.....	345 00
Coal pit and roof extension:	
Received from state auditor.....	397 04
Paid on approved vouchers.....	397 04
Paving boiler-house:	
Received from state auditor.....	100 00
Paid on approved vouchers.....	100 00
Covering steam-pipes, boiler-house and engine-room:	
Received from state auditor.....	163 69
Paid on approved vouchers.....	163 69
New boiler front:	
Received from state auditor.....	150 00
Paid on approved vouchers.....	150 00
Finishing woodwork in boiler-house:	
Received from state auditor.....	100 00
Paid on approved vouchers.....	100 00

Blow-off drain:	
Received from state auditor.....	110 00
Paid on approved vouchers	110 00
Increase of radiating surface:	
Received from state auditor.....	1,500 00
Paid on approved vouchers	1,500 00
Electric lights:	
Received from state auditor.....	500 00
Paid on approved vouchers	500 00
Telephone system:	
Received from state auditor.....	100 00
Paid on approved vouchers	100 00
Regents—mileage and per diem:	
Received from state auditor.....	998 20
Paid on approved vouchers	998 20

Respectfully submitted.

C. B. HOFFMAN, Treasurer.

MANHATTAN, March 31, 1896.

To the Board of Regents:

GENTLEMEN—Herewith find my report for the period from April 1, 1896, to June 30, 1896:

INCOME ACCOUNT.

Received from state treasurer, interest.....	\$2,645 63
" " executive department	39 74
" " farm department	1,292 77
" " horticultural department.....	54 50
" " chemical department.....	10 20
" " mechanical department.....	432 35
" " printing department.....	44 57
" " domestic department.....	277 00
" " sewing department.....	17 65
" " botanical department	66 00
" " military department.....	9 50
Total	\$4,889 91
Approved vouchers due April 1, 1896.....	\$4,761 86
Approved vouchers presented, to June 30, 1896.....	16,717 76
	21,479 62
Approved vouchers due June 30, 1896.....	\$16,589 71

Library—books;

APPROPRIATIONS.

Received from state auditor.....	\$153 01
Paid on approved vouchers	153 01
Farm implements:	
Received from state auditor.....	136 59
Paid on approved vouchers	136 59
Drawing—models and patterns:	
Received from state auditor.....	44 48
Paid on approved vouchers	44 48
History—charts and illustrations:	
Received from state auditor.....	11 96
Paid on approved vouchers	11 96
Coal—freight and hauling:	
Received from state auditor.....	19 91
Paid on approved vouchers	19 91
Water-supply:	
Received from state auditor.....	164 07
Paid on approved vouchers	164 07
Salary Loan Commissioner:	
Received from state auditor.....	125 00
Paid on approved vouchers	125 00
Care of funds:	
Received from state auditor.....	91 38
Paid on approved vouchers	91 38

New floors:	
Received from state auditor.....	\$143 81
Paid on approved vouchers	143 81
Regents—mileage and per diem:	
Received from state auditor.....	478 60
Paid on approved vouchers	478 60
General repairs:	
Received from state auditor.....	119 62
Paid on approved vouchers	119 62
Inside blinds:	
Received from state auditor.....	2 97
Paid on approved vouchers	2 97
Coal pit:	
Received from state auditor.....	2 75
Paid on approved vouchers	2 75
Covering steam-pipes:	
Received from state auditor.....	11 31
Paid on approved vouchers	11 31

Respectfully submitted.

C. B. DAUGHTERS, Treasurer.

MANHATTAN, June 30, 1896.

Loan Commissioners' Reports.

To the Board of Regents:

GENTLEMEN—I herewith hand you my report of investments made for the endowment fund of the State Agricultural College for the year ending June 30, 1895:

Invested in school bonds, 7 per cent.....	\$2,500 00
“ “ “ 6 per cent.....	3,100 00
“ municipal bonds, 6 per cent.....	12,000 00
“ “ “ 5 per cent.....	35,000 00
Total.....	\$52,600 00

All investments have been made at or above par.

Respectfully submitted.

E. D. STRATFORD, Loan Commissioner.

EL DORADO, June 30, 1895.

To the Board of Regents:

GENTLEMEN—I herewith present my report of investments made for the endowment fund of the State Agricultural College for the year ending June 30, 1896:

School bonds purchased, 7 per cent.....	\$10,683 00
“ “ “ 6 per cent.....	3,051 00
Municipal bonds purchased, 6 per cent.....	39,000 00
Total.....	\$52,734 00

The total amount of warrants drawn in purchase of these bonds, some of which were secured at a discount, is \$52,524.80, increasing the face of the total endowment by \$209.20.

Respectfully submitted.

C. E. GOODYEAR, Loan Commissioner.

OATVILLE, June 30, 1896.

Secretary's Report.

To the Board of Regents:

Gentlemen—Herewith are presented, in concise tabular form, transcripts from the books of this office, showing the condition of the endowment fund at the close of each month, the sources of income

each year, the summary of the annual inventory, and the expenditures and receipts of each college department, for the years ending June 30, 1895, and June 30, 1896. There are also added, as required by law, explicit statements of the items of expenditure under special appropriations for the same year.

Full ledger accounts of the invested funds, showing the exact condition in each investment of every kind, are kept from data furnished through triplicate receipts by the state treasurer, after original entry of each bond purchased, as to both principal and coupons. Accounts are also kept with the state treasurer and the College treasurer, the several departments of the College, special appropriations, and the distinct funds in charge of the Board of Regents. Vouchers for all expenditures, in duplicate or triplicate, and duplicate receipts for all cash received, with all general accounts, have been carefully audited, as you are aware, by the Board of Regents at the regular quarterly meetings, and the final summary has been carefully tested by comparison of the reports of other officers herewith presented. All papers are filed, readily accessible to any one inquiring into the financial condition of the College.

A separate account is kept with the experiment station in both the Secretary's and Treasurer's offices. A transcript of each is published in the annual report of the station. This report is submitted to the governor on the first day of February in each year.

Trusting that this report will be found in all respects correct and satisfactory, it is respectfully submitted for your consideration.

GEORGE T. FAIRCHILD, Secretary.

I. D. GRAHAM, Assistant Secretary.

College, June 30, 1896.

SOURCES OF INCOME.

	1894-'95.	1895-'96.
<i>Through state treasurer.</i>		
Payment of United States treasurer, act of Congress, 1890.....	\$20,000 00	\$21,000 00
Interest on school bonds, 7 per cent.....	1,218 06	1,140 16
" " 6 " "	8,502 73	6,912 00
" " 5 " "	35 00	35 00
" municipal bonds, 5 per cent.....	625 00	750 00
" " 6 " "	462 00	361 67
" " 7 " "	17,652 00	17,017 30
" real-estate securities, 8 per cent.....	120 00	120 00
" " 7 " "	244 00	
" land contracts, 10 per cent.....	213 50	213 50
" delinquent interest.....	318 20	438 70
Totals.....	\$49,390 49	\$47,988 33
<i>College departments.</i>		
Sales of products, stock, etc.....	\$3,639 08	\$4,299 21
Labor and materials for repairs and improvements.....	2,021 19	3,656 44
Labor and materials for station.....	1,261 10	1,792 47
Refunded voucher.....		9 66
Rent of land.....	70 67	
Totals.....	\$6,992 04	\$9,757 78
Through state treasurer.....	49,390 49	47,988 33
Grand totals.....	\$56,382 53	\$57,746 11

CASH EXPENDITURES AND RECEIPTS, 1894-'95.

DEPARTMENTS.	State ap- propriations,	Expenditures.				Receipts.			Actual expense.	Actual receipts.
		Income fund.		Department transfers.	Inventory decrease.	Cash.	Department transfers.	Inventory increase.		
		Instruc- tion, etc.	Labor, supplies, etc.							
Executive.....	\$71,792 79	\$3,756 20	\$6,964 34	\$692 72	.....	\$74 87	\$51 03	\$67,972 50	\$15,107 65	.....
Farm.....	1,400 00	4,817 99	154 62	.....	2,852 32	44 16	55 13	3,421 00	.....
Horticulture.....	2,020 04	2,764 50	57 28	\$2,081 89	972 28	2,497 51	.....	3,453 92	.....
Botany.....	1,020 00	507 94	33 26	.....	162 80	36 25	1,639 63	.....	.....
Zoology and entomology.....	1,200 00	423 48	6,238 25	.....	.....	.....	6,461 60	.....	.....
Physiology and veterinary.....	820 00	113 11	45 86	3,819 07	41 56	3,789 27	.....	1,397 13	.....
Chemistry.....	2,900 00	123 71	9 29	35 50	9 31	.....	.....	1,067 21	.....
Physics.....	266 66	107 73	6 07	50 00	13 02	.....	.....	3,059 19	.....
Mechanics.....	\$3,475 00	3,044 48	5,611 07	16 62	.....	2,336 29	615 46	4,597 69	417 44	.....
Mathematics.....	2,754 50	79 55	3 00	30 00	.....	.....	.....	4,597 73	.....
Industrial art.....	1,797 75	161 90	103 21	.....	.....	.....	101 33	2,867 05	.....
English.....	3,654 05	.....	3 86	.....	.....	.....	.....	1,961 53	.....
History and political science.....	1,634 50	.....	1 50	.....	.....	.....	.....	3,657 91	.....
Economic science.....	1,333 30	.....	6 90	.....	.....	.....	.....	1,636 00	.....
Domestic economy.....	1,350 00	594 04	62 27	.....	386 69	56 52	2 20	1,340 20	.....
Sewing.....	1,270 00	30 85	6 53	6 00	.....	.....	.....	1,500 90	.....
Music.....	1,200 00	232 64	7 53	165 00	.....	.....	.....	1,313 38	.....
Printing.....	1,200 00	1,276 14	42 93	18 18	142 90	274 47	.....	1,605 17	.....
Military.....	35 29	48 72	389 84	.....	.....	.....	2,119 88	.....
Library.....	\$3,232 00	600 00	705 65	42 25	.....	.....	218 00	4,469 23	543 85	107 33
Loan and treasury.....	129 90	.....	317 10	.....	1,992 28	49,162 17	.....	2 02	.....	46,724 91
Totals.....	\$24,927 03	(\$7,582 67)	\$8,597 76	\$56,154 21	(\$7,582 67)	\$85,304 33	\$51,027 14	\$47,109 72
In state treasury.....	\$78,629 69	\$33,221 48	.....	.....	.....	.....	.....	228 32	.....	228 32
Grand totals.....	\$51,027 14	\$47,388 04
Balance.....	\$145,375 96	.....	.....	\$141,686 86	.....	3,689 10

* Including value of improvements turned over by the State Board of Public Works.

CASH EXPENDITURES AND RECEIPTS, 1895-'96.

DEPARTMENTS.	State appropriations.	Expenditures.				Receipts.			Actual expense.	Actual receipts.
		Income fund.		Department transfers.	Inventory decrease.	Cash.	Department transfers.	Inventory increase.		
		Instruction, etc.	Labor, supplies, etc.							
Executive.....	\$9,923 42	\$3,845 97	\$5,782 80	\$391 14		\$42 44	\$239 27	\$4,983 65	\$14,677 97	
Farm.....	249 99	1,366 68	5,654 53	101 59	\$1,350 30	3,849 86	78 86		4,794 37	
Horticulture.....		2,020 00	3,014 44	218 35		900 83	2 68	472 55	3,876 73	
Botany.....	635 77	1,020 00	838 18	103 11		216 75		2,586 26		\$205 95
Zoology and entomology.....	1,771 23	1,200 00	528 49	88 17		36 45		2,740 57	810 87	
Physiology and veterinary.....		820 00	75 82	9 74			2 00	95	902 61	
Chemistry.....		2,900 00	415 83	14 83		66 39	32 60	167 40	3,064 27	
Physics.....		1,333 30	166 23	20 41				203 00	1,306 94	
Mechanics.....	1,770 00	3,200 00	6,611 41	26 35		3,897 24	585 42	2,389 69	4,735 41	
Mathematics.....		2,782 25	72 05	61				49 00	2,905 91	
Industrial art.....	100 00	1,784 25	247 51	6 57				149 40	1,908 93	
English.....		2,983 17	81 85	86					3,065 88	
History and political science.....	49 96	1,662 37	3 36	9 23				48 00	1,676 92	
Economic science.....		1,600 00	25 15	4 44					1,629 39	
Domestic economy.....		1,470 00	666 37	96 26	55 35	422 50			1,865 48	
Sewing.....		1,270 00	28 22	2 70	22 75	37 65			1,287 02	
Music.....		1,469 87	16 50	15					1,486 52	
Printing.....		1,200 00	1,237 04	62 05	30 87	167 78	318 87		2,043 31	
Military.....	1,500 00		101 48	135 12		49 50		719 84	967 26	5 76
Library.....	1,499 38	600 00	691 90	18 02				2,815 06		
Loan, treasury, and regents.....	1,926 80		827 29		3,552 78	48,358 84	50 00			42,101 97
Totals.....	\$19,426 55	\$34,527 86	\$27,087 45	(\$1,309 70)	\$5,012 05	\$58,046 23	(\$1,309 70)	\$17,335 37	\$52,985 99	\$42,313 68
In state treasury.....					370 51				370 51	
Grand totals.....					\$86,424 42				\$53,356 50	\$42,313 68
Balance.....								\$75,381 60		11,042 82

MONTHLY BALANCES, 1894-'95.

MONTHS.	School bonds.				Municipal bonds.			Land contracts, 10 per cent.	Real-estate securities.		Cash.	Endowment.	
	5 per cent.	7 per cent.			10 per cent.	5 per cent.	6 per cent.		7 per cent.	8 per cent.		Total.	Pro-ductive.
1894.													
July.....	\$700	\$73,544 05	\$18,104 50	\$100	.....	\$285,395	\$3,200	\$3,394 47	\$1,400	\$1,500	\$14,294 33	\$501,632 35	\$487,338 02
August.....	700	171,769 05	16,917 00	100	\$15,000	282,895	3,200	3,394 47	1,400	1,500	4,756 83	501,632 35	496,875 52
September.....	700	172,769 05	16,917 00	100	15,000	282,895	800	3,394 47	1,400	1,500	6,156 83	501,632 35	494,475 52
October.....	700	172,689 05	16,917 00	100	15,000	282,895	800	3,394 47	1,400	1,500	6,256 83	501,632 35	495,375 52
November.....	700	172,669 05	16,917 00	100	15,000	282,895	800	3,394 47	1,400	1,500	6,256 83	501,632 35	495,375 52
December.....	700	171,769 05	16,567 00	100	15,000	282,645	800	3,394 47	1,400	1,500	7,756 83	501,632 35	493,875 52
1895.													
January.....	700	166,795 05	15,867 00	100	15,000	281,645	800	3,394 47	1,400	1,500	14,430 83	501,632 35	487,201 52
February.....	700	163,778 43	14,967 00	100	15,000	275,145	800	3,394 47	1,400	1,500	24,847 45	501,632 35	476,784 90
March.....	700	163,778 43	14,967 00	100	35,000	275,145	800	3,394 47	1,400	1,500	4,847 45	501,632 35	496,784 90
April.....	700	163,778 43	17,467 00	100	35,000	275,145	800	3,394 47	1,400	1,500	3,067 45	502,352 35	499,284 90
May.....	700	163,778 43	17,467 00	100	35,000	273,645	800	3,394 47	1,400	1,500	4,567 45	502,352 35	497,784 90
June.....	700	163,006 43	17,467 00	100	35,000	273,645	800	3,394 47	1,400	1,500	5,338 45	502,352 35	497,012 90

MONTHLY BALANCES, 1895-'96.

<i>1895.</i>													
July.....	\$700	\$154,716 43	\$21,957 00	\$100	\$35,000	\$273,645	\$400	\$3,394 47	\$1,400	\$1,500	\$9,559 45	\$502,352 35	\$492,792 90
August.....	700	152,382 43	20,947 00	100	35,000	270,645	400	3,394 47	1,400	1,500	15,883 45	502,352 35	486,468 90
September.....	700	153,132 43	20,947 00	100	35,000	269,645	400	3,394 47	1,400	1,500	16,150 95	502,352 35	486,218 90
October.....	700	152,007 43	21,397 00	100	35,000	269,645	400	3,394 47	1,400	1,500	16,848 45	502,352 35	485,543 90
November.....	700	152,647 43	21,397 00	100	35,000	269,645	400	3,394 47	1,400	1,500	16,240 45	502,424 35	486,182 90
December.....	700	151,997 43	21,597 00	100	35,000	269,645	400	3,394 47	1,400	1,500	16,705 45	502,439 35	485,733 90
<i>1896.</i>													
January.....	700	147,182 43	17,928 00	100	35,000	281,645	400	3,394 47	1,400	1,500	13,267 75	502,517 65	489,249 90
February.....	700	143,737 51	16,031 36	100	35,000	279,645	400	3,394 47	1,400	1,500	15,609 31	502,517 65	486,908 34
March.....	700	143,297 51	16,031 36	100	35,000	284,645	400	3,394 47	1,400	1,500	15,509 31	502,517 65	487,008 34
April.....	700	143,648 51	16,631 36	100	35,000	293,645	400	3,394 47	1,400	1,500	*6,118 86	502,538 20	496,419 34
May.....	700	143,648 51	17,098 36	100	35,000	300,145	400	3,394 47	1,400	1,500	*6,824 79	502,561 55	503,386 34
June.....	700	142,288 51	17,098 36	100	35,000	299,145	400	3,394 47	1,400	1,500	1,355 21	502,561 55	501,026 34

* Overdraft.

COLLEGE FUNDS.

Delinquent bonds and coupons, July 1, 1896.

COUNTY.	District number.	Bond.		Coupons.		Due.
		No.	Amount.	No.	Amount.	
KANSAS.						
Allen	38	3	\$125 00	2	\$7 50	July 1, 1896.
Barber	37			12	180 00	" 1, 1896.
Sun City				15	45 00	" 1, 1896.
Chautauqua	1	Bal..	144 00			" 1, 1896.
"	10	Bal..	209 56			" 1, 1894.
"	13	2	100 00			Jan. 1, 1896.
"	14	Bal..	17 50			July 1, 1896.
"	19			4	12 00	Jan. 1, 1896.
"	19			4	12 00	July 1, 1896.
"	126	Bal..	102 85			" 1, 1896.
"	152	Bal..	14 00			" 1, 1893.
Harper	1			2	30 00	" 1, 1896.
Anthony				19	570 00	" 1, 1896.
Jewell	1	Bal..	25 00			" 1, 1896.
"	103	1	300 00			" 1, 1895.
"	103	1	200 00			" 1, 1896.
Mitchell, Beloit		4	250 00	37	277 50	" 1, 1896.
Montgomery	102	4	100 00			Jan. 1, 1896.
"	86	2	125 00			" 1, 1896.
Morris, Council Grove				4	60 00	" 1, 1896.
"				4	120 00	July 1, 1896.
"	59	Bal..	300 00			Jan. 1, 1895.
"	73	7	300 00			July 1, 1896.
"	79	2	200 00			" 1, 1896.
Pratt, refunding				9	135 00	" 1, 1895.
"				9	135 00	Jan. 1, 1896.
"				9	135 00	July 1, 1896.
Riley	65	1	100 00	4	7 00	Jan. 1, 1896.
"	65			3	9 00	July 1, 1896.
Smith	75	5	100 00			Jan. 1, 1896.
Washington	78	1	500 00			July 1, 1894.
Wyandotte, Argentine, bonds 32, 44, 67,			1,500 00	12	180 00	Feb. 1, 1896.
OKLAHOMA.						
Canadian	7			4	15 75	Jan. 1, 1896.
"	7			4	15 75	July 1, 1896.
"	30			3	40 81	" 1, 1896.
Kingfisher	21			4	21 00	" 1, 1896.
"	65			1	10 50	" 1, 1896.
Logan	59			2	19 26	" 1, 1896.
"	61			8	28 00	" 1, 1896.
"	63			1	12 33	" 1, 1896.
"	66			1	10 50	" 1, 1896.
Pottawatomie	27			1	16 35	" 1, 1896.
"	92			13	227 50	" 1, 1896.

SUMMARY OF COLLEGE INVENTORY.

Executive Department.

	June 30, 1895.	June 30, 1896.
Farm, grounds, dwellings, and water-works	\$46,675 00	\$47,660 00
College hall	79,000 00	79,000 00
Armory	10,950 00	11,250 00
Mechanics' hall	11,000 00	11,700 00
Horticultural hall	4,200 00	4,200 00
Chemical laboratory	9,600 00	9,600 00
Library and science hall	56,800 00	57,550 00
Steam-heating plant and boiler-house	15,526 39	17,000 00
Electric-lights and telephone system		650 00
In college hall, furniture and supplies	1,874 53	1,910 88
In armory	239 33	236 33
In mechanics' hall	96 67	94 42
In horticultural hall	131 00	112 00
In chemical laboratory	138 16	138 16
In science hall	114 05	234 05
In President's office	792 84	782 43

SUMMARY OF COLLEGE INVENTORY—CONTINUED.

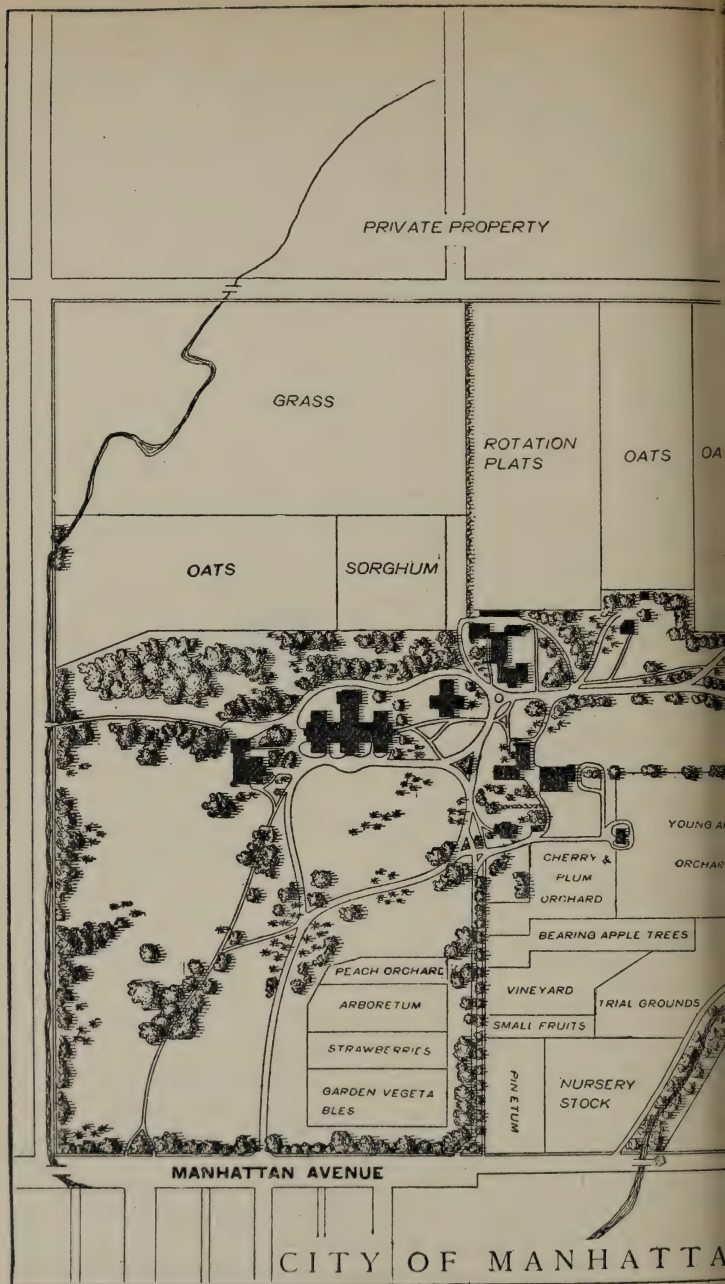
	June 30, 1895.	June 30, 1896.
<i>Executive Department—Concluded.</i>		
In vault.....	\$518 43	\$523 43
In Secretary's office.....	399 38	387 23
In chapel stage.....	165 00	165 00
In reception room.....	390 00	405 00
In roofing slate on hand.....	75 00	70 00
In Columbian Exposition pictures, etc.....	1,013 85	1,013 85
Miscellaneous.....	107 70	107 70
Totals.....	\$239,806 83	\$244,790 48
<i>Treasurer's Department.</i>		
Accounts receivable.....	\$4 72	\$4 72
Office furniture.....	80 15	25 15
Totals.....	\$84 87	\$29 87
<i>Farm Department.</i>		
Buildings.....	\$10,740 00	\$10,745 00
Work horses.....	470 00	500 00
Cattle—Shorthorns.....	2,975 00	2,550 00
“ Polled Angus.....	950 00	700 00
“ Jerseys.....	815 00	875 00
“ Herefords.....	550 00	600 00
“ Holstein-Freisians.....	900 00	960 00
“ Steers, for experiments.....	252 00	
Swine—Berkshires.....	261 00	115 00
“ Poland-Chinas.....	375 00	270 00
“ Grades.....	20 00	105 00
Sheep—Shropshires.....	220 00	220 00
Machinery and tools.....	3,411 86	3,473 55
Miscellaneous farm tools.....	666 75	586 64
Office fixtures.....	249 50	257 75
Wells, fences, etc.....	2,447 50	2,173 00
Crops in barn.....	284 10	638 02
Crops in ground.....	1,364 00	391 00
Totals.....	\$26,946 71	\$25,169 96
<i>Horticultural Department.</i>		
Plantations.....	\$3,200 00	\$3,285 00
Greenhouse and stock.....	9,116 14	9,243 51
Greenhouse and lawn tools and supplies.....	305 73	346 28
Horses and horse tools.....	853 95	643 20
Hand and garden tools and fixtures.....	689 50	700 91
Workshop tools.....	45 15	43 80
Offices furniture and apparatus.....	1,139 49	1,159 34
Supplies on hand.....	43 97	54 42
Stone barn, etc.....	1,000 00	1,046 10
Accounts receivable.....	252 16	594 08
Totals.....	\$16,644 09	\$17,116 64
<i>Botanical Department.</i>		
Microscopes and accessories.....	\$1,375 67	\$1,375 67
Furniture and cases.....	557 25	1,211 27
Supplies.....	252 43	268 28
General herbarium.....	1,504 00	1,600 00
Kansas herbarium.....	821 50	1,459 90
Cryptogamic herbarium.....	625 68	625 68
Herbarium duplicates.....	1,060 00	2,190 00
Tools and apparatus.....	483 66	535 65
Totals.....	\$6,680 19	\$9,266 45
<i>Zoological Department.</i>		
Zoological collections.....	\$2,810 00	\$3,186 00
Geological collections.....	1,382 00	1,910 00
Miscellaneous collections.....	34 00	30 00
Furniture and apparatus.....	1,556 60	3,190 85
Laboratory microscopes.....	354 85	373 93
Laboratory accessories.....	241 45	514 39
Totals.....	\$6,464 60	\$9,205 17

SUMMARY OF COLLEGE INVENTORY — CONCLUDED.

	June 30, 1895.	June 30, 1896.
<i>Mechanical Department.</i>		
Wood shop, equipment and supplies.....	\$5,783 29	\$6,258 95
Machine shop, equipment and supplies.....	4,253 00	5,375 45
Foundry, equipment and supplies.....	1,277 69	1,194 45
Blacksmith shop, equipment and supplies.....	1,133 58	1,224 40
Pipe house, equipment and supplies.....	360 93	516 21
Blue-print room.....	29 75	31 50
Power-house.....	2,702 72	2,744 50
Boiler-room.....	5,675 84	6,111 63
Mason supplies.....		9 10
Office furniture, etc.....	643 65	803 55
Bills receivable.....	664 55	671 31
Photograph supplies.....	26 95	
Totals.....	\$22,551 45	\$24,941 14
<i>Sewing Department.</i>		
Furniture.....	\$151 50	\$154 50
Machines.....	305 00	290 00
Cases and apparatus.....	227 50	216 75
Totals.....	\$877 16	\$661 25
<i>Printing Department.</i>		
Presses, types, etc.....	\$4,321 69	\$4,321 72
Office furniture.....	143 25	198 75
Paper stock.....	156 90	136 30
Bills receivable.....	124 32	58 52
Totals.....	\$4,746 16	\$4,715 29
<i>Musical Department.</i>		
Instruments and charts.....	\$4,264 35	\$4,264 35
Furniture, apparatus, etc.....	60 00	60 00
Totals.....	\$4,324 35	\$4,324 35
<i>Military Department.</i>		
College property.....	\$979 11	\$1,698 95
Totals.....	\$979 11	\$1,698 95
<i>Library Department.</i>		
Books and pamphlets.....	\$26,602 95	\$28,291 78
Furniture.....	3,539 85	4,115 84
Catalogues.....	1,982 00	2,604 50
Binders, cases, etc.....	171 50	101 24
Bills receivable.....	2 00	
Totals.....	\$32,298 30	\$35,113 36
Grand totals.....	\$84,889 68	\$89,438 33

SUMMARY OF COLLEGE INVENTORY—CONCLUDED.

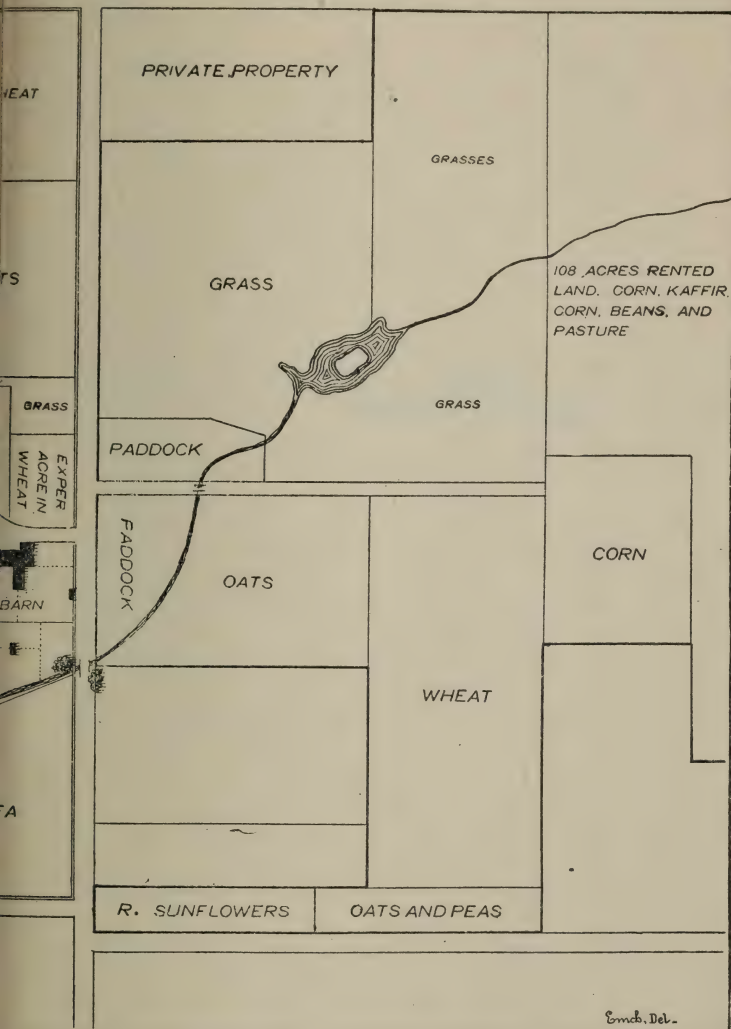
	June 30, 1895.	June 30, 1896.
<i>Chemical Department.</i>		
Chemicals	\$206 85	\$216 00
Chemical apparatus	3,056 30	3,214 70
Platinum ware, wire, etc.	138 75	139 00
Mineral and rock collections, with cases.	3,471 00	3,473 00
Office furniture and supplies	164 05	161 65
Analytical tables, with water, gas, etc.	1,447 55	1,447 55
Totals	\$8,484 50	\$8,651 90
<i>Veterinary Department.</i>		
Anatomical	\$1,925 39	\$1,933 49
Apparatus and furniture	2,341 20	2,334 05
Totals	\$4,266 59	\$4,267 54
<i>Domestic Department.</i>		
Kitchen laboratory	\$693 10	\$659 30
Dairy	184 05	162 50
Totals	\$877 15	\$821 80
<i>Physics Department.</i>		
General physical apparatus	\$452 55	\$555 85
Sound apparatus	106 35	104 10
Heat apparatus	164 45	158 45
Meteorological apparatus	190 35	190 60
Light apparatus	580 05	578 55
Bells and lines	150 45	211 45
Electrical apparatus	2,015 65	2,103 10
Telegraph supplies	95 15	55 90
Cases, etc.	597 00	597 00
Totals	\$4,352 00	\$4,555 00
<i>Mathematical Department.</i>		
Surveying apparatus	\$1,293 50	\$1,342 50
Mathematical apparatus	68 75	68 75
Totals	\$1,362 25	\$1,411 25
<i>Industrial Art Department.</i>		
Furniture	\$1,351 54	\$1,418 54
Models and studies	601 60	686 70
Apparatus and materials	239 10	236 40
Totals	\$2,192 24	\$2,341 64
<i>English Department.</i>		
Cyclostyle, pictures, etc.	\$30 00	\$30 00
<i>History and Political Science Department.</i>		
Maps and charts	\$78 29	\$126 29



GROUNDS, EXPERIMENTAL FIELDS, AND PLANTATIONS OF THE **Kansas State Agricultural College**

220 ACRES

The College uses 200 acres not shown here.



Emch, Del.



BIENNIAL REPORTS
OF THE
COLLEGE DEPARTMENTS,
1895-'96.

REPORT OF THE PRESIDENT.

To the Board of Regents:

Gentlemen—The biennial report of matters under my charge as President of the Kansas State Agricultural College cannot materially differ from those of past years, except by showing a record of progress. All departments have made a reasonable growth, as will appear in the reports of professors and superintendents, all of whom have added two years of experience in their work with admirable service.

The faculty now numbers 24, with no change in the two years except by the return of Professor Nichols after a year's absence for study, and the retirement of Mr. Jones. Its organization into committees is practically unchanged from that reported in 1894. The tried and trusted assistants and foremen have for the most part remained at their posts, doing most excellent service. It is rare, indeed, that so efficient a corps of instructors can be retained as ours has been. The fact that special inducements to go elsewhere, at increased salaries, have been declined shows devotion to the work in hand.

SEVENTEEN YEARS OF GROWTH.

I have now been nearly 17 years in charge of this work, with a constantly increasing interest and encouragement. During this period, almost exactly one-half the history of the College, the improvements have been marked. The faculty proper has exactly doubled, while the whole number of officers and expert assistants has increased from 15 to 43. The annual attendance of students, in spite of greater requirements for admission and in the course, has nearly tripled, while the number in classes above the first year in the course, then comparatively elementary, has risen from 93 to 291. The graduating class has advanced from 9 to 66, and the whole number of graduates from 49 to 520. Of postgraduate students in science and arts, there were then none; now there are 32, most of whom seek a master's degree.

The material advancement of the College in equipment and apparatus is also noticeable. The report of 1879 showed an invested endowment of \$256,425.79, and an income from all sources of \$20,402.64; the present report gives the invested endowment at \$500,956.39, and

a total income for College and experiment station of \$73,656.37. Buildings and grounds were then valued at \$61,445, and the total inventory was \$86,008.76; now the buildings and grounds, counting only additions, without estimating enhanced value of property or improvements by extensive plantations, are worth \$238,610, and the total inventory is \$401,544.26.

The chief gratification is found in the fact that this growth has been chiefly in the departments of industrial training. Then, while all students were required to take some training in the arts, no systematic course was provided in any; now regular classes are assigned at stated times to agriculture, horticulture, woodwork, sewing, and household economy. Then the total equipment of the farm department was about \$11,000, with an annual expenditure of \$2,000; now it uses property, aside from the land, worth \$30,000, and expends about \$7,000. The horticultural department, then combined with all the natural sciences except geology, chemistry, and physics, has grown into entire separation from the sciences, increasing its equipment from \$800 to \$17,100, and its annual expenditure from about \$1,000 to \$3,000. The mechanical department has had a growth quite as marked in figures, though more recent, from an equipment worth \$1,145 to one worth \$24,940, and from an annual expenditure of \$2,000 to one of \$6,600. These figures for expenditures do not include any credit for receipts.

Other departments have made equally satisfactory growth, though not to be noted so well in dollars and cents. This is especially true of the various chairs of science and that of industrial art. Some have quite outgrown their accommodations and need room and equipment fit for their work, notably the departments of household economy and sewing, physics, and chemistry, all of which are closely related to the practical purposes of the College.

It is gratifying to feel that these years have raised the rank of the College among similar institutions in the country to the first place in attendance of students and to acknowledged repute for its high standard of work for the industries. Within our own state its consistent and earnest work has met with the approbation of the people, so that its single four years' course draws more students than any other four years' course in all the institutions of the state.

The above facts are enumerated in no boasting spirit, but simply to emphasize the present importance of the interests presented, and the need of earnest effort on the part of all interested in maintaining this wholesome development along the lines of productive industry.

STABLE POLICY.

During all these years the policy has been constant of maintaining with manual training a single course of study in the natural sciences, with special adaptation to the industries, attended by sound discipline in mathematics, logic, and philosophy, good training in English language and literature, and a fair introduction to history, political and economic science. The arrangement of studies has been adjusted to strictest economy of time and closest union with the common schools of the state, so that, whether the student remained through the course or not, he could gain the most possible in the time spent. For this reason there has been little demand for short special courses in agriculture or horticulture, the whole atmosphere of the place being in keeping with the pursuit of these arts. Technical courses for graduates and advanced students have been provided as needed, much to the advantage of the College as well as the students. Many of these are given excellent assistance in their specialties, and are fitting themselves for places in other schools and experiment stations.

THE PRESENT PROGRESS.

Details of the progress during the two years are given in reports of the various departments. My own report must be largely general.

The routine of classwork and general duties has been little varied; but recently the experiment of making Monday instead of Saturday the weekly holiday has been tried, with such favor that the experiment is to be continued next year.

During the entire two years, in accordance with the action of the Board, the chapel lectures by members of the faculty in rotation have given place to lectures upon economic science by Professor Will. These have been alternated with the public rhetorical exercises during the fall and winter terms.

The short course of lectures for farmers, occupying two weeks in February of each year, has been continued, with the following programs:

1894-'95.

- "Intellectual Growth in Farm Homes," President Fairchild.
- "Origin and Properties of Soil," Professor Failyer.
- "Fungous Diseases of Field and Garden Crops," Professor Hitchcock.
- "General Considerations in Economic Entomology," Professor Popenoe.
- "Origin and Characteristics of the Leading Breeds of Cattle," Professor Georgeson.
- "Agricultural Literature," Professor Lantz.
- "Principles of Selecting and Breeding Live Stock," Professor Georgeson.
- "Some Hereditary Diseases of Animals," Professor Mayo.
- "Pumps and Power," Professor Hood.

- "Water for House Use," Professor Failyer.
- "Farm Insects," Professor Popenoe.
- "Nitrogen in Some of its Relations to Agriculture," Professor Willard.
- "How Plants Obtain their Food," Professor Hitchcock.
- "Parasitic Diseases of Animals and their Treatment," Professor Mayo.
- "Propagation of Orchard Trees," Professor Mason.
- "The Home Lot," Professor Walters.
- "Principles of Feeding Live Stock," Professor Georgeson.
- "Meats," Professor Kedzie.
- "Beneficial Insects," Professor Popenoe.
- "Money, I," Professor Will.
- "Farm Accounts," Professor Graham.
- "The Farmer Makes his Farm," President Fairchild.
- "Varieties of Vegetables for the Farm Garden," Professor Mason.
- "Contagious and Infectious Diseases; their Cause and Prevention," Professor Mayo.
- "Necessity for Maintaining the Fertility of the Farm," Professor Georgeson.
- "Soil Management and Irrigation in the Garden," Professor Mason.
- "Relation of Plants to Climate," Professor Hitchcock.
- "Money, II," Professor Will.
- "Home Dairying," Professor Georgeson.
- "Fruits for Home Use and Market," Professor Mason.

1895-'96.

- "Suggestions on Thrift from Observations on Foreign Agriculture," President Fairchild.
- "Experiments in Cropping, and their Lessons," Professor Georgeson.
- "Tuberculosis, and the Tuberculin Test," Professor Mayo.
- "Effects of Soil Tillage," Professor Failyer.
- "Feed Stuffs, and How to Use them," Professor Georgeson.
- "Leading Dairy Breeds and their Characteristics," Professor Georgeson.
- "Some Diseases Caused by Bad Food," Professor Mayo.
- "What per Cent. of the Farm Should be Planted in Potatoes?" Hon. Edwin Taylor.
- "The Use of Counter-irritants," Professor Mayo.
- "Farm Accounts," Professor Graham.
- "Swine Breeding," Hon. T. A. Hubbard.
- "Dairy Farming," Professor Georgeson.
- "Literature in the Home," Professor Olin.
- "The Philosophy of Price," Professor Will.
- "Small Fruits by Irrigation," Professor Mason.
- "Recent Methods in Applied Entomology," Professor Popenoe.
- "Lightning Conductors," Professor Nichols.
- "The Farmer's Vineyard," Professor Mason.
- "Some Garden Insects, and their Control," Professor Popenoe.
- "The Citizen and the Law," Professor White.
- "Bread," Professor Kedzie.
- "Trees and Shrubs for Shelter and Beauty," Professor Mason.
- "How Plants Live," Professor Hitchcock.
- "The Ash of Plants," Professor Willard.
- "Obstacles in the Way of Orchardng," Hon. F. Wellhouse.

- "Literature of Agriculture," Professor Lantz.
 "The Moral Influence of Dress," Mrs. Winchip.
 "Agriculture in Central Europe," Professor Walters.
 "Windmill Notes," Professor Hood.
 "Relation of Plants to Climate," Professor Hitchcock.

On account of the meager attendance from outside the immediate neighborhood, it has been thought best to discontinue this course, although those attending have expressed great satisfaction with the lectures. Farmers find it difficult to leave their work and their homes for the two weeks required, and hesitate to bear the expense of a journey. At the College, this extra course becomes something of a burden, in being added to work already abundant.

THE FARMERS' INSTITUTES.

The custom so well established of holding institutes under the auspices of the College has continued, with increasing interest. A larger number of counties than ever has been visited each winter, by from one to four members of the faculty in each institute. Following are the places of institutes in each of the two years.

1894-'95.

Oneida, Nemaha county.
 Hays City, Ellis county.
 Leonardville, Riley county.
 Nortonville, Jefferson county.
 Russell, Russell county.
 Gardner, Johnson county.
 Oberlin, Decatur county.
 Garden City, Finney county.
 Haven, Reno county.
 Peabody, Marion county.
 Lakin, Kearny county.
 Cherry Vale, Montgomery county.
 Clay Centre, Clay county.
 Wa Keeney, Trego county.
 Oak Grange, Shawnee county.
 Hutchinson, Reno county.
 Hiawatha, Brown county.
 Stockton, Rooks county.
 Washington, Washington county.
 Goodland, Sherman county.
 Pleasanton, Linn county.
 Garnett, Anderson county.

1895-'96.

Hutchinson, Reno county.
 Oneida, Nemaha county.
 Hiawatha, Brown county.
 Nortonville, Jefferson county.
 Mission Center, Shawnee county.
 Peabody, Marion county.
 Mound City, Linn county.
 Edgerton, Johnson county.
 Washington, Washington county.
 Randolph, Riley county.
 Pleasanton, Linn county.
 Russell, Russell county.
 Cherry Vale, Montgomery county.
 Overbrook, Osage county.
 Concordia, Cloud county.
 Haven, Reno county.
 McPherson, McPherson county.
 Iola, Allen county.
 Garden City, Finney county.
 Newton, Harvey county.
 Berryton, Shawnee county.
 St. Mary's, Pottawatomie county.

During the past 16 years there have been held a total of 159 institutes, which were distributed among the various counties as follows: Brown, Jefferson, Johnson, Nemaha, and Russell, seven each; Finney and Shawnee, six each; Franklin, Linn, and Reno, five each; Marion, Osborne, Pottawatomie, Rooks, Wabaunsee, and Washington, four each; Clay, Cowley, Ellis, Ford, Kearny, McPherson, Marshall, Montgomery, Osage, Ottawa, Riley, and Trego, three each; Allen, Cloud, Coffey, Crawford, Douglas, Ellsworth, Geary, Greeley,

and Sherman, two each; Anderson, Atchison, Barton, Butler, Chautauqua, Cherokee, Decatur, Dickinson, Harper, Harvey, Jackson, Jewell, Miami, Mitchell, Republic, Phillips, Rice, Sumner, and Wallace, one each.

GENERAL WELFARE.

The routine of the past two years has been essentially that given in previous reports. No serious discipline has been required until the very close of the last year, when the boisterous action of a body of students in the office of one of the professors led to the expulsion of one and the temporary suspension of five students of the incoming third and fourth-year classes. No death has occurred in the College, and no case of very serious illness has been recorded. In the last winter, nearly a dozen cases of scarlet fever appeared at various intervals, but no general epidemic resulted. It is a matter of general congratulation that the health of so large a body of students has been so uniformly good. But four deaths have occurred in the past 17 years.

The four College literary societies have been prospered by increase of members and interest, fostered by the more commodious rooms furnished by the new building. Each has given one excellent entertainment in the College chapel, and all have united in securing a public lecture at the close of the year. The lecture of 1895 was given by Col. L. F. Copeland, of Harrisburg, Pa., and that of 1896 by Dr. Bernard Bigsby, of Detroit, Mich. The societies need a better furnishing for their two rooms, especially in the way of seats. The legislature of 1895 failed to provide for this deficiency in the new building.

The place of college athletics in such an institution as this, where industrial training and the spirit of industry require somewhat continuous duties, has been a question of careful consideration. While the faculty agree in fostering such athletic sports as may add to the health and vivacity of college life, it has been felt that intercollegiate contests in games or oratory usually conflict with the best interests of the College, and they have received little encouragement. At the same time pains have been taken, within the means available, to encourage gymnastic practice for the young men and calisthenics for the young women. Training classes have been carried on under direction of graduate or advanced students, and a committee of the faculty has had the general oversight. It is desirable that better provision for such training be made in the near future.

The annual commencement in each year has brought the friends of the College from all over the state. In 1895 the annual address was given by Dr. F. W. Gunsaulus, of Chicago, and the graduates,

57 in number, presented outlines from their graduating theses on commencement day. In 1896, the class, numbering 66, was too large for such a presentation, and the graduating theses were prepared and filed, without public delivery of any portion of them. The annual address, by Hon. Eugene F. Ware, of Topeka, occupied the place of honor in the graduating exercises.

The class-day exercises have come to be regarded as of prominent interest in the commencement week, and have been given a prominent place in the week's program.

The graduates for the past two years are 57 and 66, all of whom received, by direction of the Board of Regents, the degree of bachelor of science. Their names and residences follow:

1895.

Edward Jones Abell, Scottsville, Mitchell.
Carl David Adams, Osawkie, Jefferson.
Robert John Barnett, Denison, Jackson.
Burton Wesley Conrad, Capioma, Nemaha.
Florence Ruth Corbett, Manhattan, Riley.
Sid Henry Creager, Jamestown, Cloud.
Elsie Emeline Crump, Manhattan, Riley.
David Thomas Davies, Manhattan, Riley.
Frank Andrew Dawley, Vincent, Osborne.
Daisy Day, Manhattan, Riley.
Flora Day, Manhattan, Riley.
George Adam Dean, Topeka, Shawnee.
Lillie Christina Dial, Manhattan, Riley.
Lucy Ellis, Havensville, Pottawatomie.
Victor Emrick, Lone Tree, Mo.
George Forsyth, Howard, Elk.
Ernest Harrison Freeman, North Topeka, Shawnee.
Florence Eleanor Fryhofer, Randolph, Riley.
George William Fryhofer, Randolph, Riley.
Oscar Hugo Halstead, Leonardville, Riley.
Emelyn Hortensia Harman, Valley Falls, Jefferson.
John Bright Harman, Valley Falls, Jefferson.
Clarence Victor Holsinger, Rosedale, Wyandotte.
Christian Andrick Johnson, Success, Russell.
John James Johnson, Success, Russell.
Fred Ralph Jolly, Manhattan, Riley.
William Irving Joss, Fairview, Brown.
Maud Estella Kennett, Silver Lake, Shawnee.
Myron Arthur Limbocker, Manhattan, Riley.
Samuel Alexander McDowell, Manhattan, Riley.
Laura Sarah McKeen, Manhattan, Riley.
Theodore Wattles Morse, Mound City, Linn.
Oscar Albert Otten, Brenner, Doniphan.
William Hackworth Painter, Meade, Meade.
Charles Wesley Pape, Topeka, Shawnee.

Ethel Faye Patten, Silver Lake, Shawnee.
John Vernon Patten, Silver Lake, Shawnee.
William Henry Phipps, Chapman, Dickinson.
Alice Julia Quintard, Silver Lake, Shawnee.
Frederick Elsworth Rader, Manhattan, Riley.
Ralph Waldo Rader, Manhattan, Riley.
Ada Rice, Manhattan, Riley.
Benjamin Franklin Simeon Royer, Sterling, Rice.
Charles Baxter Selby, Manhattan, Riley.
Mabel Gertrude Selby, Manhattan, Riley.
Ernest Parker Smith, Manhattan, Riley.
Frederick John Smith, Morganville, Clay.
Kitty Myrtle Smith, Manhattan, Riley.
Marietta Smith, Manhattan, Riley.
William Henry Steuart, Winchester, Jefferson.
Cora Idella Stump, Manhattan, Riley.
Dora Thompson, Irving, Marshall.
Elven Creveling Trembly, Council Grove, Morris.
George Carpenter Wheeler, Burlington, Coffey.
Mary Elizabeth Willard, Wamego, Pottawatomie.
Olive Mabel Wilson, Austin, Ill.
Ora Gertrude Yenawine, Manhattan, Riley.

1896.

May Haines Bowen, Manhattan, Riley.
Con Morrison Buck, Oskaloosa, Jefferson.
Margaret Isaphene Carleton, Manhattan, Riley.
William Annesley Cavanaugh, Manhattan, Riley.
William Arthur Coe, Coloma, Woodson.
Charlotte Mabel Cotton, Wabaunsee, Wabaunsee.
Ernest Brown Coulson, Cherokee, Oklahoma.
George Henry Dial, Cleburne, Riley.
Charles Francis Doane, Louisville, Pottawatomie.
John Berthold Dorman, Ballston Spa, N. Y.
Bradford Dougherty, Kansas City, Wyandotte.
Charles Silar Evans, Sunset, Ky.
Robert Kirby Farrar, Axtell, Marshall.
George William Finley, Manhattan, Riley.
Joanna Freeman, Manhattan, Riley.
John Jacob Fryhofer, Randolph, Riley.
Elmer George Gibson, Willard, Shawnee.
George Clifton Hall, Hoyt, Jackson.
Alonzo Charles Havens, Dwight, Morris.
Gertrude Julia Havens, Dwight, Morris.
Lawrence Wilbur Hayes, Manhattan, Riley.
John Warren Holland, Cokeville, Wyo.
Henry George Johnson, Assaria, Saline.
Susan Effie Johnson, Success, Russell.
Marion Elizabeth Jones, Manhattan, Riley.
Thomas Lormar Jones, Manhattan, Riley.
Edward Clarence Joss, Fairview, Brown.
Royal S. Kellogg, Fay, Russell.

Mark Patrick, Fredonia, Wilson.
 Edith Lynette Lantz, Manhattan, Riley.
 Sue Long, Manhattan, Riley.
 Charles W. Lyman, Manhattan, Riley.
 Charles Dwin McCauley, Wilburn, Ford.
 Charles Sumner Marty, Merriam, Johnson.
 Mrs. Elda Lenore Moore, Manhattan, Riley.
 Arthur Houston Morgan, Hillside, Phillips.
 Clara Verena Newell, Manhattan, Riley.
 Ellen Elizabeth Norton, Manhattan, Riley.
 John Bitting Smith Norton, Manhattan, Riley.
 Hattie A. Paddleford, Stockdale, Riley.
 Mary Kerilla Painter, Meade, Meade.
 Elva Luthera Palmer, Clifton, Washington.
 Inez Luella Palmer, Clifton, Washington.
 Fannie Parkinson, Pomona, Franklin.
 Archie Carpenter Peck, Big Valley, Tex.
 Arthur Louis Peter, Oakland, Shawnee.
 Charles Edwin Pincomb, Hector, Johnson.
 Mary Josephine Pincomb, Hector, Johnson.
 John Poole, Briggs, Geary.
 Edgar Arthur Powell, Osage City, Osage.
 Lisle Willetts Pursel, Manhattan, Riley.
 Howard Newton Rhodes, Manhattan, Riley.
 Ambrose Elliot Ridenour, Manhattan, Riley.
 Mary Etta Ridenour, Manhattan, Riley.
 Isaac Archie Robertson, Manhattan, Riley.
 Grace Anna Secrest, Randolph, Riley.
 Carl Snyder, Oskaloosa, Jefferson.
 Max Gilbert Spalding, Eureka, Greenwood.
 Orville Ashford Stingley, Manhattan, Riley.
 Sadie Stingley, Manhattan, Riley.
 Gertrude Ella Stump, Manhattan, Riley.
 Miriam Esther Swingle, Manhattan, Riley.
 William Elwood Thackrey, Manhattan, Riley.
 James Dunbar Trumbull, Manhattan, Riley.
 Frank Edwin Uhl, Gardner, Johnson.
 Edwin H. Webster, Yates Center, Woodson.

The second degree, master of science, was conferred, after a course of two years in College, or three years by correspondence, upon the following graduates :

1895.

Louis Brous, '86, Portland, Ore. Architecture, Designing, Mathematics.
 James Guthrie Harbord, '86, Fort Leavenworth, Leavenworth. Engineering,
 Veterinary Science.
 Bertha S. Kimball, '90, Manhattan, Riley. Entomology, Horticulture.

1896.

James E. Payne, '87, Cheyenne Wells, Colo. Agriculture, Botany.
 Fred Coleman Sears, '92, Manhattan, Riley. Horticulture, Botany.

Ruth Tipton Stokes, '92, Manhattan, Riley. Domestic Economy, Botany.

Walter Tennyson Swingle, '90, Naples, Italy. Botany, Horticulture.

Effie Jeannetta Zimmerman, '91, Moray, Doniphan. Domestic Economy, Chemistry, Music.

In 1896 the triennial gathering of the society of alumni added greatly to the general interest of commencement. Several hundred sat down to the banquet of the society and shared in the general reunion. Prof. Frederick J. Rogers, '85, now of Cornell University, gave an admirable address on "The Position of the Sciences in the Activities of Life."

ATTENDANCE.

The following tabular statement for the two years past shows the facts in figures as to attendance:

COURSES.	1894-'95.				1895-'96.			
	Gentlemen.	Ladies.	Total.	Average age.	Gentlemen.	Ladies.	Total.	Average age.
Postgraduate....	13	17	30	26.18	15	17	32	29.10
Fourth year.....	40	24	64	22.49	46	25	71	22.02
Third year.....	58	31	89	20.73	35	32	67	21.61
Second year.....	64	44	108	20.50	72	49	121	20.74
First year.....	182	94	276	19.26	249	104	353	20.01
Special.....	4	1	5	25.05	2	1	3	22.86
Totals.....	361	211	572	20.51	419	228	647	20.89

The classes of people gaining advantage of the free tuition offered at this College are shown by the following statistics, taken from the records of the Secretary, made at matriculation, under the heading

Parents' Business (Undergraduates, 1895-'96).

Farmers, stock-raisers, horticulturists.....	414
Mechanics	26
Merchants, clerks, and mercantile agents.....	48
Physicians.....	7
Ministers.....	12
Teachers.....	7
Lawyers.....	17
Civil officers.....	11
Army officers.....	2
Editors.....	4
Boarding-house keepers.....	16
Bankers and brokers.....	5
Liverymen.....	2
Laborers.....	10
General business men.....	5
Miscellaneous.....	6
Not given.....	22
Total	615

The attendance by counties was as follows:

COUNTIES.	1894-'5.	1895-'6.	COUNTIES.	1894-'5.	1895-'6.
Anderson.....	3	1	Linn.....	3	2
Atchison.....	4	1	Logan.....	1	4
Barton.....	1	1	Lyon.....	4	3
Bourbon.....	6	3	McPherson.....	2	2
Brown.....	6	3	Marion.....	4	7
Butler.....	1	1	Marshall.....	9	10
Chase.....	2	7	Meade.....	2	2
Chautauqua.....	1	1	Miami.....	2	15
Cherokee.....	2	2	Mitchell.....	3	1
Clay.....	10	16	Montgomery.....	1	1
Cloud.....	1	3	Morris.....	10	11
Coffey.....	4	5	Nemaha.....	6	8
Comanche.....	1	1	Neosho.....	1	1
Cowley.....	1	2	Osage.....	20	19
Crawford.....	1	1	Osborne.....	3	1
Dickinson.....	7	11	Ottawa.....	3	2
Doniphan.....	6	7	Pawnee.....	1	2
Douglas.....	7	5	Phillips.....	6	7
Edwards.....	1	1	Pottawatomie.....	16	15
Elk.....	6	2	Reno.....	1	1
Ellsworth.....	1	2	Republic.....	1	6
Finney.....	3	2	Rice.....	6	7
Ford.....	1	1	Riley.....	206	215
Franklin.....	4	4	Rooks.....	2	1
Geary.....	13	15	Rush.....	1	2
Gove.....	1	1	Russell.....	12	10
Graham.....	1	1	Saline.....	5	5
Greenwood.....	5	4	Sodawick.....	1	1
Hamilton.....	1	3	Seward.....	1	3
Harper.....	2	1	Shawnee.....	26	15
Harvey.....	1	1	Sheridan.....	1	2
Jackson.....	11	11	Smith.....	1	2
Jefferson.....	11	16	Sumner.....	1	1
Jewell.....	3	4	Thomas.....	1	1
Johnson.....	15	24	Wabaunsee.....	20	21
Kearny.....	1	1	Washington.....	5	13
Kiowa.....	1	1	Wilson.....	2	2
Leavenworth.....	8	7	Woodson.....	6	11
Lincoln.....	4	8	Wyandotte.....	4	5

The attendance from states other than Kansas was as follows:

STATES.	1894-'5.	1895-'6.	STATES.	1894-'5.	1895-'6.
Arkansas.....	1	1	Missouri.....	4	4
California.....	1	1	Nebraska.....	5	1
Canada.....	1	1	New Mexico.....	1	1
Colorado.....	1	2	New York.....	1	1
Germany.....	1	2	Ohio.....	1	1
Illinois.....	3	4	Oklahoma.....	4	7
Indian territory.....	1	2	Oregon.....	1	1
Iowa.....	1	1	Queensland.....	1	1
Italy.....	1	1	South Dakota.....	1	1
Kentucky.....	1	1	Texas.....	1	3
Michigan.....	1	1	Wyoming.....	1	1

Recapitulation.

1894-'95—From 66 counties of Kansas.....	546
From 14 other states.....	26
Total.....	572
1895-'96—From 72 counties of Kansas.....	612
From 17 other states.....	35
Total.....	647

THE EXPERIMENT STATION COUNCIL.

The work of the station is reported, according to law, in a separate annual report issued in January of each year, the bulletins being fully indexed for that report. It is sufficient here to call attention to these reports already printed and distributed. The council has faithfully carried out the purposes of the act of Congress creating the station, and its work has been commended by the representative of the United States department of agriculture for the care and accuracy shown in our records of progress. It has been the plan from the beginning to preserve original data in every experiment, and to publish such data sufficiently full to enable others to draw conclusions. The experiments in irrigation at Garden City and Oberlin have been carried forward under difficulties which have led essentially to abandonment of the plan in these places. At the request of the State Board of Irrigation, a plant at Oakley was taken in April last, for a trial under more favorable conditions of water-supply. So far there has been only a partial irrigation on account of breaks in the machinery. It seems wise to ask that satisfactory provision for a single irrigation station be made by the state. The fund of \$15,000 appropriated for the central station by Congress should not be dissipated by dividing it.

PERSONAL DUTIES.

My teaching for the past two years has included only classes in psychology and logic. These have necessarily been taught in two divisions, in the winter and spring terms, giving me two hours of teaching in each. During the fall term I have been free from teaching, to the advantage of executive duties with the very large classes of new students each year. My classes have numbered, in psychology 53 and 68, and in logic essentially the same numbers and individuals.

The usual executive cares have been borne with some slight addition from the increased attendance. Not a little inconvenience has come from being deprived of a dwelling on the premises. The dwelling occupied by my family was struck by lightning on the evening of April 5, 1895, and burned, with most of its contents. It has since been necessary to find a place of residence in the city, at a considerable personal expense.

In the summer of 1895, by permission of the Board, three months were spent in a tour of several countries of Europe. Although the trip was a hurried one, largely for health and pleasure, I was enabled to make observations of benefit in my duties at College. For careful oversight of the executive offices during my absence, I am under obli-

gations to Secretary Graham. This vacation is the longest taken in the 17 years of service here.

Extra duties have come in the increased work of the State Board of Education under new legislation, and in the State Board of Irrigation, of which I am *ex officio* a member: but the burden has been light. My share in the farmers' lecture course and institutes has been essentially the same as in previous years. I have also taken part in the State Teachers' Association and in various district associations. The trip to Europe furnished materials for a report to the State Board of Irrigation, under commission from the governor, and a paper before the annual meeting of the State Board of Agriculture, prepared at the suggestion of Secretary Coburn.

The *Industrialist* has been nominally under my management, but the editorial work has been divided among the members of the faculty by a standing committee of that body, while the selection of miscellaneous matter and the gathering of local news has been very largely in charge of Superintendent Thompson. Student editors, three in number, have been selected from term to term by the students, and have done good service in collecting items of interest from student circles. The desire has been to center student interest in the paper; but during the past year several students have started the *Students' Herald*, as a private enterprise, seeking a freer exercise of individual expression than the College paper affords.

In all the work of the office I have had efficient assistance from Miss Grace M. Clark.

EXPENDITURES.

The expenditures of the executive department have been considerably increased by the increased attendance and the enlarged space occupied by classes. The following is a summary for the separate years covered by this report, not including the cost of new buildings, steam plant and repairs, completed under direction of the State Board of Public Works, and put in my care after the close of the financial year ending June 30, 1894:

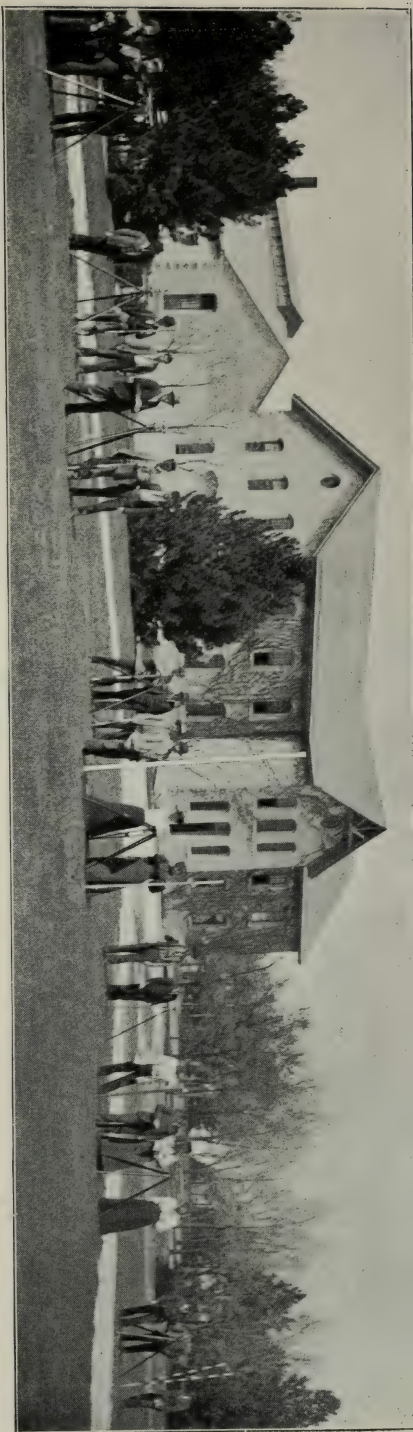
	1894-'95.	1895-'96.
Office:		
Postage.....	\$319 20	\$393 30
Stationery.....	38 98	35 75
Labor, clerks.....	720 00	744 50
Furniture.....	6 50	
Totals.....	\$1,084 68	\$1,173 55
Care of buildings:		
Janitors' wages.....	\$800 00	\$800 00
Students' wages.....	1,014 54	1,155 53
Fuel.....	2,030 10	2,127 48
Lights.....	45 31	119 12
Implements, soap, etc.....	54 02	119 88
Totals.....	\$3,943 97	\$4,322 01

	1894-'95.	1895-'96.
Buildings:		
Improvements.....		\$4,249 36
Repairs.....	\$1,251 51	2,985 14
Totals.....	\$1,251 51	\$7,234 50
College:		
Furniture.....	\$279 21	\$487 93
Incidentals.....	447 08	406 67
Totals.....	\$726 29	\$894 60
Grounds:		
Care.....	\$18 10	
Improvement.....		\$754 65
Totals.....	\$18 10	\$754 65
Sundries:		
Advertising.....	\$114 15	\$7 75
Telephone.....	32 50	100 00
Catalogues.....	14 75	54 60
State examinations.....	19 45	
American Association of Agricultural Colleges.....	10 00	56 00
Dedication of new hall.....	75 54	
Regents, hack.....	83 75	52 00
Water-supply.....	500 00	733 03
Farmers' institutes.....	430 50	336 81
Traveling expenses, Topeka, etc.....	106 62	
Rent of land.....	245 00	245 00
Commencement and diplomas.....	173 35	132 86
T. E. Will, expenses.....	86 90	
Totals.....	\$1,892 51	\$1,718 05
Grand totals.....	\$8,917 06	\$16,097 36

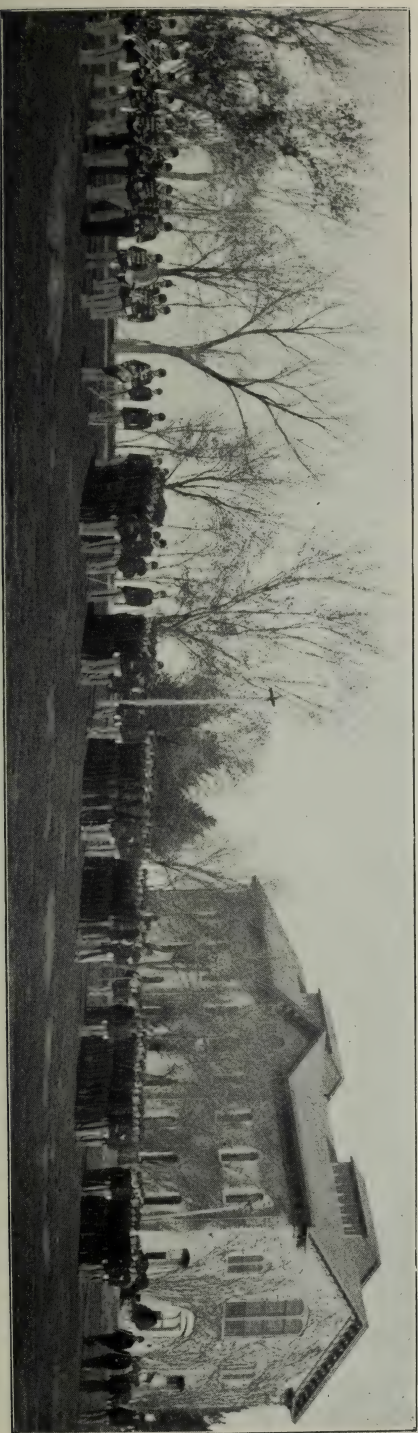
The above report is respectfully submitted, with the hope that it may be satisfactory to all interested in the growth of the College.

GEORGE T. FAIRCHILD, President.

State Agricultural College, June 30, 1896.



SURVEYING SQUADS.—IRON AND WOODWORK SHOPS.



THE COLLEGE BATTALION.

REPORT OF THE SECRETARY.

To the Board of Regents:

Gentlemen—Herewith is submitted a brief report of the work in my charge for the two years ending June 30, 1896.

As your Assistant Secretary, my work remains the same as in past years, except that with each succeeding year of growth of the College there comes to this office a greatly increased labor and responsibility which is felt nowhere else so heavily. In addition to the results of my work as shown in the reports of your Secretary, I may add that the many records of accounts with the state and College treasurers, the Loan Commissioner, and all the different College departments, have been kept as heretofore, with such additions as the necessities of the business of the College have required.

All departments report to this office, and the most complete record is made of all the business affecting the College. A brief statement regarding these records is here repeated:

A voucher record, in which all bills against the several departments of the College are entered, with proper dates, number, and name of payee. This account is verified by cross additions every month, and closed into the monthly accounts of receipts and expenditures of the income fund, the several appropriations from the state for buildings or improvements, and the data of reports from the several officers of the College and the state treasurer.

Bond ledger, in which, in a series of books, is shown a complete record of each bond, with coupons, and of each payment, shown by triplicate receipts from the state treasurer.

Accounts with state treasurer, showing date, number and amount of each triplicate receipt, classified as to sources of income or kind of investment reduced; also date, number and amount of each warrant against either fund, and disbursements made and securities deposited. After verification with the monthly report of the state treasurer, this account is closed monthly and the results carried to the monthly balance account, wherein is preserved the exact condition of all funds and offices at the close of each month.

Inventory of all property of the several departments of the College in itemized detail, revised and recopied at the close of each fiscal year, a summary of which is shown in the report of your Secretaries.

Department transfers, showing exchange of value in work or materials between College departments. This account is balanced at the close of each year and closed into the department accounts.

State appropriations record, in which is shown, by number and amount, all vouchers drawn against the several specific appropriation funds, and, by date and amount, the warrants drawn on the state auditor for the same.

As secretary of the faculty, my duties embrace the following: The keeping of the minutes of the regular weekly and of special faculty meeting, and the posting of action affecting students' standing to their proper individual records in the students' registers. The keeping of the student registers, in which an individual record is kept, on a separate page, for each student during his connection with the College, and in which is recorded the date of entrance and of leaving, the grades obtained in each study of the course, with the term averages, all excused and unexcused absences, all special examinations, and other particulars.

The mailing of catalogues and reports of the College, and of special issues of the *Industrialist*, the reading of *Industrialist* exchanges, the noting and recording of all absences of students from all general exercises, the paying of the monthly pay-roll of students and men, the distributing and gathering of the daily mail for students and faculty, the keeping of the necessary supplies of stationery, etc., for all departments, the furnishing of information to students in regard to boarding places and caring for their lost articles, the examination of candidates for admission to College after the beginning of each term, and the oversight of various special examinations and attention to an increasing correspondence are among the various duties which fall to this office. During the summer of 1895, the state appropriation of \$100 for a telephone system between buildings became available, and it fell to my lot to erect the system and put it in working order and maintain it. Although handicapped by the limited appropriation, the best use possible was made of it, and a system of 10 offices was established, with the "central" in this office. The system as established has given only fair service, though with additional expenditures and constant care it now works well. This has added very materially to the work of this office, as it requires the almost constant attention of one person to answer calls, and a very considerable amount of time to repair damages by wind, etc., but the saving in time to the College as a whole has been immense. It is earnestly hoped that an additional appropriation may be secured at the next meeting of the legislature with which to perfect and extend the system.

In the work of the experiment station, the duties which fall to the Secretary embrace the keeping of a voucher record, in which all bills rendered against the several departments of the station are entered, with proper date, number, and name of payee; the keeping of the minutes of the meetings of the station council; the publication and distribution of all bulletins and reports issued by the station; the filing of all bulletins and reports received from other states and countries; the attending to all the general correspondence of the station, and the revision and maintenance of the list of correspondents in this and other states and countries to whom the publications of the station are sent. This list contains some 6,000 names.

During the period covered by this report, there have been mailed from this office, in addition to the large numbers of former publications sent out by request, the number of publications here shown: Bulletins 47 to 58, inclusive, 96,000; annual reports, 16,000; making a total of 112,000.

The enrollment in my classes in bookkeeping and commercial law, for the two years covered by my report, is here shown:

CLASSES.	1894-'95.			1895-'96.		
	Gentlemen.	Ladies.	Total.	Gentlemen.	Ladies.	Total.
Fall term.....	25	34	59	25	59	84
Winter term.....	24	64	88	24	63	87
Spring term.....	9	4	13	1	8	9
Totals.....	58	102	160	50	130	180

The usual work which has come to me through a membership in several of the standing committees of the faculty, attendance upon farmers' institutes and other associations, and contributions to the *Industrialist*, has not varied materially from that of former years. During the past two years I have enjoyed the faithful assistance of Miss Lorena Clemons in the duties of the office during a part of her time daily. It is to be hoped that provision may be made at an early date by which her whole time can be devoted to the work.

Respectfully submitted,

I. D. GRAHAM,

Assistant Secretary of Board,
Secretary of Faculty,
Secretary of Experiment Station Council, and
Instructor in Bookkeeping and Commercial Law.

COLLEGE, June 30, 1896.

DEPARTMENT REPORTS.

Farm Department.

To the Board of Regents:

GENTLEMEN— I have the honor to submit the following report on the condition of the farm department and on the work accomplished during the period from June 30, 1894, to June 30, 1896.

CLASSROOM WORK.— The plan of instruction provides for only two terms of classroom work in agriculture during the four years' course, namely, the winter term of the second year (12 weeks = 60 fifty-minute periods), and the fall term of the fourth year (14 weeks = 70 fifty-minute periods). The second-year students have, during the 12 weeks of the winter term, received instruction in, 1st, a brief history of agriculture, and, 2d, in the origin, development and characteristics of each of the leading breeds of cattle, horses, sheep, and swine. The latter subject is a comprehensive one, and the time is too short to do it full justice. The instruction is given in lectures.

The young men of the fourth year have, during the fall term, been instructed in, 1st, the principles of breeding live stock; 2d, the principles of stock-feeding; 3d, construction and arrangement of barns and outbuildings; 4th, culture of the leading forage crops, especially those adapted to Kansas, and 5th, rotation of crops and the use of manures. It has been impossible to do more than merely touch on the salient points of most of these subjects. The time is too short to admit of their being probed to the bottom.

FARMERS' INSTITUTES.— I have attended about a dozen institutes in various parts of the state, and I have also read papers at the meetings of the Kansas State Dairy Association both years, and at last year's meeting of the State Board of Agriculture, and I have also contributed papers to other meetings where industrial questions were discussed. The institute work interferes somewhat seriously with my classroom instruction, as it requires me to leave the class to an assistant on an average once in two weeks, or two or three school days out of every 10, during the winter.

OFFICE WORK.— As in former years, numerous inquiries, chiefly relating to our experimental work, have been addressed to the department by farmers of this and other states, all of which have been answered as promptly as possible and as fully as the occasion demanded.

INDUSTRIAL WORK.—There has been no change in the plan or character of students' industrial work since my last report, except that the five hours a week of required work have been reduced to five 50-minute periods, in order to make the time occupied in required exercises uniform in all departments of the institution. The pay remains the same as before, 10 cents being the maximum for a full hour's work.

As you are doubtless aware, the required industrial work on farm and garden is limited to the young men in the spring term of the second year, and to the same class the following fall term, when they rank as third years; but at no time do all report to either department. The farm takes care of half of the number in the class, while the garden provides for the other half, and at mid-term they change, so that those who were on the farm will report in the garden, and those who were on the garden report on the farm. They partake in all ordinary operations of the farm which may be in progress at the time. During the spring term, however, most of the required time is devoted to practice in judging live stock, the subject being fresh in their minds from classroom work in the preceding winter term. Each student is then required to examine all the animals in each of the five breeds in the College herd, and to grade them on the scale adopted for the breed.

FARM AND EXPERIMENTAL WORK.—With the exception of the work done by a herdsman with two teamsters in summer and one in winter, all the farm and experimental work is done by students, not under compulsion, for the required time at farm work amounts to not more than six days during the four years' course, but done of their own free will in their spare time. They are paid 10 cents an hour during term time and $12\frac{1}{2}$ cents an hour during vacation. The number of students applying for work is greatly in excess of the number needed.

The Board is aware that nearly all the crops raised on the farm are under experimentation. The experiment station has thus absorbed all the land suitable for platting, and left for the farm proper only the slopes, washes and pieces not of uniform quality, which are mostly utilized in raising feed. The total number of plats in the field during 1894-'95 was 850, and in 1895-'96, 786.

ROTATION OF CROPS.—In the cropping of the land I aim to follow a rotation of corn, oats, wheat, each one year, and grass two years, as far as possible; but it cannot be strictly adhered to owing to frequent failures to secure a stand of grass. This rotation is at present also deviated from somewhat in order to give the land belonging to the College a rest in grass before the lease on the Williston farm expires, two years hence. With this end in view, I seeded down field C in

the spring of 1895 and field B in the present spring, and it is my plan to seed down field D in the spring of 1897.

THE FARM HOUSE, purchased by the Board last winter, has been occupied by the foreman, Mr. George Sexton, since he began work, March 1, last, and he boards the teamsters and herdsman. Although the house is not quite as close to the barn as could be desired, its acquisition is a vast improvement over the old system of having the men board in town. The foreman has furnished the house at his own expense. The water-supply at that house is wholly inadequate to the requirements. There is only a small cistern, which with ordinary use is emptied in a few weeks of dry weather. There is an urgent need for a better supply, and I would respectfully ask that a pipe be extended to the house from the water-works at the barn. This will be cheaper than to dig a well, to say nothing of the uncertainty of the success of a well.

TEAMS.—We have six good work horses, comprising four geldings and a span of mares, and also a saddle pony used mostly by the herdsman. The old horse "Jeff," which I was authorized to destroy more than a year ago, has earned his feed so far, but is now crippled with rheumatism and will not be wintered. One of the geldings belongs to the experiment station. His mate was disabled by an accident and had to be shot.

THE HERD.—The only change which has taken place in the make-up of the herd since my last report is one of improvement in the individuals which compose it. Among the Shorthorns several old cows have been sold and their places taken by heifers bred on the place. The matchless sire, Imported Craven Knight, left eight daughters in the herd of the low, blocky, beefy type, so much coveted by breeders, and their descendants, which began to come in the past spring, give promise of developing equally good qualities. We have had no difficulty in disposing of the young bulls produced in the herd at fair prices. It will be necessary to dispose of Golden Knight, the Shorthorn stock bull, during the coming winter or spring, if his heifers are retained. At the close of the period covered by this report, the Shorthorns of all ages in the herd numbered 30 head.

The few Herefords on the farm, two cows, a bull, and two head of young stock, are also superior animals. The same is true of the few head of Aberdeen-Angus cattle on the place. There seems to be no great demand for Aberdeen-Angus cattle for breeding purposes. I have been obliged to sell several head to the butcher, although they were fine specimens of the breed, and duly advertised for sale.

The Holstein-Friesian herd now consists of three excellent cows,

a heifer in calf, a superb stock bull, and two bull calves. The cows are an excellent nucleus for a dairy herd of the breed.

Among the Jerseys, there are one old cow, three fine young cows, and three heifer calves. A fine old cow died last winter of milk fever. This herd is headed by one of the best-bred bulls of the breed. He was purchased last year, when a three-months-old calf, from the famous herd of Mr. C. A. Sweet, Buffalo, N. Y. He is sired by a son of Ida Marigold, of World's Fair fame, and out of a cow that has made over 25 pounds of butter in seven days. He is, in addition, a superb individual. He weighed 1,005 pounds when a year and a half old. My plan is to retain all heifer calves, in order to build up a herd.

SWINE.—What I said in my last report on this subject holds good still. The only breeds represented here are the Berkshire and Poland-China, a boar and a few sows of each. The male pigs find ready sale, but most of the females go to the butcher. We are sadly in need of a piggery with adequate room in pens and lots to admit of their proper handling, and we cannot do more in swine breeding than we do at present until we get it. It is highly desirable to have three or four more of the leading breeds represented here, as means of instructing the students.

SHEEP.—A small flock of Shropshires has been kept for several years; but we have no sheep barn, and for want of a place to put them the increase is sold. The flock numbers 10 head.

NEEDS OF THE DEPARTMENT.—Most of the needs enumerated in my report two years ago are still unsupplied.

1. I would again urge that the land belonging to the Williston estate be purchased for the College. The College does not own land enough for the work of the department, and no other tract so conveniently situated can be had.

2. A small sheep barn is needed.

3. A better piggery is needed. In a state where hog raising is of so much importance as it is in Kansas, the Agricultural College ought, in my judgment, to have accommodation for several breeds, which should serve as object-lessons for the students as well as for experiment.

4. Much of the fencing on the farm needs renewing and repairing. No appropriation has been made for this purpose of late years.

5. The roof on the old wing of the barn is leaky and needs renewing.

6. The plank flooring in the cattle barn is rotten and has given out. It ought to be supplanted by a cement floor.

7. All exposed portions of the barn, implement shed and corn-crib ought to be painted.

8. I would again respectfully call attention to the need of a dairy building and creamery for the instruction of students. At present, the young men are afforded no facilities for the study of this branch of farming, which is so rapidly growing in importance in this state; they are obliged to go to other states for instruction. There is a demand for practical information in that line which the college cannot meet at present. Ten thousand dollars invested in a building, machinery and scientific apparatus for instruction and research in dairy lines would redound to the prosperity of the state a thousandfold.

All of which is respectfully submitted.

C. C. GEORGESON,

Professor of Agriculture, and Superintendent of Farm.

COLLEGE, June 30, 1896.

Horticultural Department.

To the Board of Regents:

GENTLEMEN—In accordance with your appointment, I assumed charge of the department of horticulture September 1, 1894, and have the honor to submit the following report of work from that date to June 30, 1896: Classes in horticulture have been taught during each of the fall and spring terms since; the work being given in lectures as heretofore. Owing to the difference of time in the fall and spring terms, the work has been varied somewhat, but is substantially according to the following outline: (1) Plant physiology; a brief view of the plant structure, and the laws of its growth. (2) Plant propagation, showing the ways in which young plants are produced from seeds and buds, with a glance at the ways by which new varieties are obtained. (3) Vegetable gardening. (4) Culture of orchard fruits. (5) Culture of grapes. (6) Small-fruit culture. (7) Fruit characters; a study of botanical and varietal characters of our most common cultivated fruits. (8) Selected list of fruits best adapted to Kansas. (9) Methods of gathering, packing, storing, and marketing fruits. (10) Some common diseases of fruits and vegetables, with their treatment.

In the winter term of each year, a class comprising the young women of the fourth year has been taught in floriculture. The time has been divided between classroom work and practice in the green-houses. Instruction has been given in the methods of propagating and growing the more familiar flowering and foliage plants, bulbs, hardy annual and perennial plants, shrubs and ornamental trees, with



STUDENTS AT WORK IN THE GARDENS.

The legislative appropriation of \$800 for walks and drives has been expended in part in the construction of a stone arch over the ditch at the south of the College grounds. From this a macadamized driveway 14 feet wide has been constructed as far as the library building, and it is hoped that future appropriations will enable us to extend this to the heating plant and shops, so that a solid roadway be ready for heavy hauling in all kinds of weather. The balance of the fund was expended in some needed brick pavement of the walks approaching the library and main building and in brick coping to the cinder walks as far north as mechanic's and horticultural halls.

The ground around the library and science hall has been graded and seeded, and a considerable number of evergreens placed in groups for the most effective beautifying of the site.

The stone culverts under the roadways and the embankment along the creek road allowed by you during the past year have effected a much-needed improvement in taking off surface water and saving the lower part of the grounds from summer floods. The removal of the old nursery house and barn has added greatly to the appearance of that portion of the grounds.

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1895.

DEBITS:		
Cash expenditures.....		\$3,684 50
Department charges.....		57 28
Total.....		\$3,741 78
Distributed as follows:		
Grounds.....	\$587 45	
Gardens and greenhouses.....	1,373 05	
Teams.....	308 20	
Tools.....	161 91	
General repairs and supplies.....	102 44	
Office supplies and assistance.....	61 20	
Supplies and assistance in instruction.....	404 85	
Museum.....	3 00	
Freight, express, and postage.....	24 33	
Labor for experiment station and other departments.....	715 25	
CREDITS:		
Cash receipts.....		972 28
Department credits.....		73 12
Increase in inventory.....		339 15
Balance — cost of department and improvements not inventoried.....		2,357 23
Total.....		\$3,741 78

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1896.

DEBITS:		
Cash expenditures.....		\$3,814 44
Department charges.....		218 35
Total.....		\$4,032 79
Distributed as follows:		
Grounds.....	\$745 22	
Gardens and greenhouses.....	1,398 17	
Teams.....	181 13	
Tools.....	136 86	
General repairs and supplies.....	55 56	
Office supplies and assistance.....	41 30	
Supplies and assistance in instruction.....	269 58	
Freight, express, and postage.....	34 68	
Labor for experiment station and other departments.....	\$1,170 59	

FINANCIAL STATEMENT, 1896 — CONCLUDED.

CREDITS:	
Cash receipts.....	900 83
Department credits.....	2 68
Increase in inventory.....	472 55
Balance—cost of department and improvements not inventoried.....	2,656 73
Total.....	4,032 79

*Paid on department pay-roll and drawn back by voucher.

Respectfully submitted.

S. C. MASON.

COLLEGE, June 30, 1896.

Department of Botany.

To the Board of Regents:

GENTLEMEN—During the summer vacation of 1894 the department of botany was moved into its new quarters in the library and agricultural science hall. The new rooms are on the second floor of the building and are used as indicated below.

CLASSROOM.—East left-hand light; separate desks for 42 students; slate blackboard all around; wall case for specimens; chart holder. The charts for the latter are enlarged reproductions of plates and cuts found in standard botanical works. They are drawn on thick manilla paper one yard square, and illustrate all departments of botany. There are at present 92 of these charts.

MAIN LABORATORY.—North light; slate blackboard; two large cases for supplies, and one case with glass doors for students' microscopes, 26 in number; three tapering laboratory tables, allowing space for 27 students.

HERBARIUM.—The wall space is taken up by herbarium cases to the height of six feet. These cases are provided with Jenk's locks and contain 816 compartments. There are also book shelves for the books used in connection with the herbarium. The floor space is occupied by tables. The herbarium itself contains 39,590 specimens, as follows: General herbarium—flowering plants, 13,547; seed collection, 1,500; twig collection, 458; cryptogams, (mostly fungi), 9,186; Kansas herbarium—flowering plants, 14,899.

PRIVATE OFFICE AND LABORATORY.—The office opens into the classroom and into the laboratory. This room contains that portion of the college library deposited with the botanical department and also the private botanical library of the professor, which is accessible to students. The private laboratory opens into the office.

STATION ROOM.—This room contains most of the apparatus of the botanical department of the experiment station. There are several cases for glassware, chemicals, and books. Opening into this room is

a photographic dark room and a zinc-lined culture room. The library contains 421 bound volumes and numerous pamphlets, and is especially rich in work on smuts and other injurious fungi.

MUSEUM.—The third floor of the museum has been allotted to the botanical department for a botanical museum. Much material has accumulated, only a portion of which has been put in place for exhibition.

GARRET.—A portion of this upper floor is well lighted and gives ample space for pressing plants and also for storage purposes.

The elementary botany has been arranged so that approximately half the first-year class take the study in the fall and half in the spring, meeting each term in two divisions.

The fourth-year class in structural botany meets during the winter term in two divisions. The class meets two hours a week for recitations in the lecture-room and five hours a week in the laboratory for practical work with the microscope. The classes during the two years past have been so large that it was necessary to organize three divisions for laboratory work.

During 1894-'95, there was organized a class of special students in botany, composed mostly of postgraduates. This class met daily through the year. In 1895-'96 several students, including most of the postgraduates in botany, elected to take the work in the extended course in botany, which has already been outlined in the annual catalogue. A class in German botany has met during the two years, reading during the first year Pax, "*Allegemeine Morphologie*," and during the second year Wiesner, "*Biologie der Pflanzen*."

The following table indicates the number of students taught in the botanical department during the two years ending June 30, 1896:

Year.	Term.	Subject.	No.
1894-'95	Fall	Elementary botany	104
		Special botany	5
		German botany	5
	Winter	Vegetable anatomy	57
		Special botany	3
		German botany	5
	Spring	Elementary botany	62
		Special botany	9
		German botany	5
1895-'96	Fall	Elementary botany	105
		Morphology and ecology	7
		German botany	13
	Winter	Vegetable anatomy	64
		German botany	9
		Elementary botany	91
	Spring	Systematic botany	6
		German botany	7

In the summer vacation of 1894 I made a trip to central Florida, and again in the winter vacation of 1895-'96 to south Florida, bringing back important collections of the plants of that state. These trips were made on leave of absence, but without expense to the College.

In 1895 you appropriated the sum of \$75 for a collecting trip in Kansas. I spent nine weeks in the field, accompanied by Mr. R. H. Pond, collecting in 33 counties, and bringing back about 11,000 specimens. The trip was made by wagon, the route taken being in general, as follows: Manhattan, Lincoln, Ellsworth, up the Smoky to Wallace county, Leoti, Syracuse, Coolidge, Point of Rocks, in Morton county, Ulysses, Garden City, Scott, Ness City, Jetmore, Rush Centre, Marion, Council Grove, Manhattan.

Our collection of Kansas plants is by far the largest in the state, and is one of the largest state collections in our country.

The department has prepared 25 sets of duplicates, entitled "Flora of Kansas." These sets are offered for sale and are likely to prove a source of income in the future. The sets now include 600 numbers, and are sold at \$36 each. Five orders have thus far been received. During the present season the sets are being extended, and the additions will be ready for distribution the coming winter.

The work of the experiment station has proceeded chiefly along two lines—the investigation of corn-smut, and observations upon the weeds of Kansas. Three bulletins have been published, all upon the subject of Kansas weeds: No. 50, upon "Seedlings"; No. 52, "Preliminary Circular in Distribution"; and No. 57, "Descriptive List." Much material has been accumulated upon the subject of corn-smut, and also many additional notes and observations upon weeds, all of which will be published in the near future.

FINANCIAL STATEMENT.

EXPENDITURES.	1894-'95.	1895-'96.
Labor (including station).....	\$376 06	\$695 17
Freight.....	23 96	24 13
Collecting trips.....	37 58	36 73
Herbarium.....	5 80	
Repairs.....		3 60
Furniture.....		15 25
Supplies:		
Drawing.....	7 20	1 32
Herbarium.....	18 75	122 66
Class instruction.....	52 83	12 75
Museum.....		13 28
Stationery.....	6 39	14 00
Sundries.....	12 61	5 35
Totals.....	\$541 18	\$944 24
RECEIPTS.		
Department transfers.....	\$36 25	\$39 00
Labor in experiment station—cash.....	120 00	180 75
Plants sold—cash.....		36 00
Inventory increase.....	1,644 63	2,581 28
Totals.....	\$1,800 88	\$2,837 03
Proceeds.....	1,259 70	1,892 79

Respectfully submitted,

COLLEGE, June 30, 1896.

A. S. HITCHCOCK,

Professor of Botany.

Department of Entomology and Zoology.

To the Board of Regents:

GENTLEMEN — I have the honor to submit the following report of work done in the department of entomology and zoology, and in the general museum, for the biennial period ending June 30, 1896:

With the completion of science hall, in the autumn of 1894, came the anticipated rearrangement of duties by which I was placed in charge of the work in zoology, with the curatorship of the general museum, and assigned rooms in the new building. Being relieved of the work in horticulture, the classes in entomology, together with the station work in that field, remain with me. This arrangement dates from the 1st of September, 1894. The work thus falling to my charge is in every way most agreeable, and in accord with my original choice.

The classes of which I have had charge are as follows:

1894-'95.— Fall term, entomology, two classes; winter term, zoology, two classes; spring term, entomology, two classes, geology, one class. Special students in independent work in entomology and zoology during the year, eight.

1895-'96.— Fall term, entomology, one class; winter term, zoology, two classes; spring term, entomology, two classes. Special students in independent work in entomology, zoology and geology during the year, five.

In addition, I have had direct oversight of the work of a number of postgraduate students in entomology and zoology.

Other duties have occupied the hours not employed in teaching, the chief being the work incident upon the removal and rearrangement of the specimens in zoology and geology belonging to the general museum. These specimens have been cleaned, classified, and placed in temporary arrangement upon the shelves in the cases in the new museum room, so far as these have been completed. The labels have been largely rewritten and a beginning made in a system of permanent record, involving the recataloguing of the entire collection. This work will require considerable time for its completion. It is proposed to arrange and display a selection from the collections, labeled and mounted in a manner calculated to give a direct educational value to the series, rather than to attempt the exhibition of all the specimens in any particular group. This will necessitate provision for the safe storage of the remainder, under proper classification, where they may be accessible for study or drawn upon as needed for duplicates in exchanges.

The zoological series is in better shape for use in instruction than is the geological collection. A fair representation of the fauna accessible to the collector in this locality is already in hand. Much indispensable extralimital material is yet to be supplied, and here is a most serious need. Specimens and models to illustrate structural types of which representatives do not occur here must, from the nature of the case, be acquired mostly by purchase, and, properly prepared, they are somewhat expensive.

In the geological collection, the material in hand has not been selected with special reference to the needs of our students in geology, and much of it is not directly available. Where such lack can be met by local collections it is the intention so to meet it, and much in this line has already been done in the period covered by this report. Other needs are now being met through exchange of material with collectors elsewhere. But to secure all the material actually necessary to an educational series, such as ours must be, some must be purchased. It is greatly to be desired that funds for the purchase of needed museum material be made early available.

The accessions to the collections in zoology and geology by gift are here listed, with the names of the donors. Collections made by members of the department force or those received by exchange are not included in this list.

ACQUIRED BY GIFT.

Where no locality is given, the article was collected in the vicinity of Manhattan.

C. D. Adams: Pueblo Indian vase, from New Mexico; three species of fossils.

Harold Blachley: Two shrews.

Capt. E. B. Bolton: Live armadillo, from southwest Texas.

C. M. Breese: Specimens of Shoveler duck, American bittern, Short-eared owl, Screech owl.

Messrs. Breese and McCreary: Sharpshinned hawk and Baldpate duck.

L. P. Brous: Little Striped skunk.

F. C. Burtis: Bullsnake and three Pocket gophers.

Myra Chandler: Fragment of fossil elephant tusk.

A. A. Cottrell: Red-tailed hawk, from Wabaunsee.

E. P. Coulson: Bobwhite.

F. W. Cragin: Twenty-three species of lower cretaceous fossils, from Texas and Indian territory.

J. H. Criswell: Spotted salamander.

F. B. Dial: Shrew.

A. Dickens: Two jumping sand rats (alcoholic), McPherson: one Sandhill crane, Bushton.

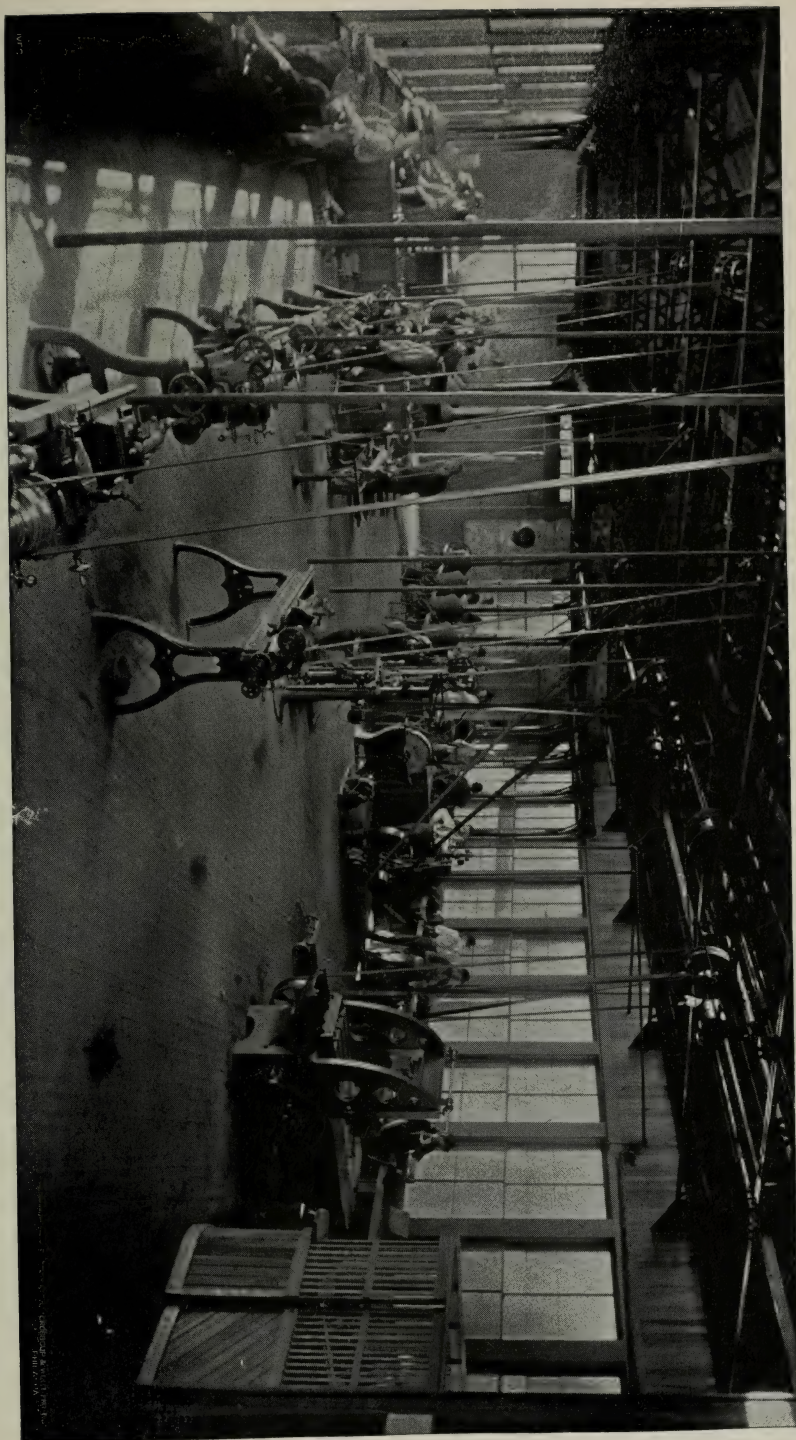
E. A. Drown: Spotted salamander.

Grant Evans: Two species of fossils.

C. S. Evans: Fossil coral.

- G. H. Failyer: Collection of insects (alcoholic), from Colorado: lower cretaceous fossils, from Kiowa county.
- H. B. Forest: Two Emory's racers.
- E. G. Gibson: Four slabs of fossils.
- Mrs. E. D. Goodnow: Indian lariat of buffalo hair, made about 1856.
- C. P. Hartley: Collection of insects from Idaho.
- O. P. Hood: Baltimore oriole.
- Frances Harrold: American bittern, from Riley.
- Walter Hardy: Raccoon.
- Isaac Jones: Six lizards, American white pelican, and collection of insects, all from Logan county.
- R. S. Kellogg: Salamander (alcoholic), crystals of selenite, and four species cretaceous fossils, all from Russell county.
- E. H. Kern: Prairie-dog, from Jewell county.
- R. H. Kimball: Forty species of marine forms (alcoholic) and 45 species of shells, represented by many specimens, all from Garden Grove, Cal.
- Mrs. R. H. Kimball: Three species of fossils.
- J. B. Kimball: Pouched rat, in the flesh, and five pelts of coyote cubs.
- Stella Kimball: Three species marine forms (alcoholic), from Cape Cod, Massachusetts.
- Bertha Kimball: Collection of insects, Pike's Peak region, Colorado.
- L. Kinkaid: Western red-tail.
- C. P. King: Centipede (alcoholic), from Arkansas.
- Warren Knaus: Skeleton of wolf (?), western Kansas.
- Geo. Lyon: American white pelican, Junction City.
- Munger: Blacksnake.
- C. Mansfield: Four species fossils, from Geary county.
- F. A. Marlatt: Skull of pointer.
- S. C. Mason: Small collection of fossils; two species snakes; collection of rock specimens and silurian fossils, from northern Utah; collection of univalve shells, from Bear Lake, Idaho.
- N. S. Mayo: Numerous relics from site of Kaw village, Pottawatomie county.
- Messrs. Mayo and Breese: Pectoral sandpiper.
- A. C. McCreary: Barred owl.
- J. W. Metler: Live alligator, 23 species of marine shells, and dried sea-horse, all from Florida.
- F. H. Meyer: Great Hoary bat.
- R. B. Mitchell: Seven specimens Pocket gopher.
- Douglass Morrison: Pigeon hawk.
- Maude Naylor: Red gypsum, from Alta Vista.
- D. W. Nellis: Concretions from Shawnee county.
- S. J. Norton: Carboniferous fossils and conglomerate.
- J. B. S. Norton: Irregular and twinned crystals of quartz from east Tennessee.
- Jesse Norton: Copperhead; common rat; several specimens of house mouse; carboniferous fossils.
- C. W. Pape and Jesse Norton: Striped ground squirrel.
- W. H. Phipps: Skull of mountain sheep, or bighorn, Montana.
- E. A. Popenoe: Prairie-dog, found near Manhattan.
- C. H. Popenoe: Upper carboniferous fossils.
- Hubert Popenoe: Fossil coral, from Shawnee county.
- E. A. Powell: Fossil corals, from Osage county.
- P. H. Rader: Screech owl.

THE MACHINE-SHOP.



- D. W. Randall: Four Pouched rats: American sparrow hawk.
 Benj. Rehfield: Franklin gull; copperhead.
 Joseph Reyburn: Copperhead; Bluetailed skink.
 C. E. Rice: Poor-will, young.
 J. Ross: Sora rail.
 Geo. Sexton: Bronzed grackle.
 E. M. Shelton: Bagworm case; 10 bird skins, from Queensland, Australia.
 J. H. Shrink: Carboniferous fossils, from Harveyville.
 F. J. Smith: Fossil wood, from Clay county.
 C. C. Smith: Sigillaria in sandstone, from Cedar county, Missouri.
 M. G. Spaulding: Carboniferous fossils and chipped flints, from Greenwood county.
 J. H. Stearns: Bagworm cases, from Mound City.
 C. H. Stokely: Prairie mole.
 Dan'l Stout: Fossil from Graham county.
 E. C. Stratton: Spike iron ore, from Oregon county, Missouri.
 James Sutton: Fossil wood, with teredo borings, Russell county.
 G. H. Taylor: Fossils from Chautauqua county.
 F. A. Thackrey: Cretaceous fossils, from Cow creek Indian agency, South Dakota.
 J. E. Thackrey: Cretaceous fossils, from Bad Lands, South Dakota.
 J. S. C. Thompson: Ruddy duck.
 Messrs. Thompson and Breese: Specimens of Lesser Scaup duck, Blue-winged teal, Greater yellowlegs, Lesser yellowlegs, American golden plover, Pectoral sandpiper, American bittern.
 G. K. Thompson: American white pelican, from Irving.
 Geo. Washington: Twin-pig monstrosity.
 T. C. Wells: Fossils and minerals from various localities.
 Wm. Whitney: Pouched rat.
 Myrle Wolfe: Sawwhet owl.
 H. L. Zeller: Prairie-hen and two jack-rabbits, from Keats.
 F. Zimmerman: Woodchuck, from Moray, Kas.

The most important accession is that of a collection of ores, minerals, and rocks, the gift of the National Museum, secured through the recommendation of Senator Peffer, at my request. Of this collection the following is a list of the specimens, with their localities:

- Gold ore, Auriferous Sulphurets: Gilpin county, Colo.
 Gold ore, Auriferous Sulphurets in quartz: Mariposa county, Cal.
 Gold-silver ore, Quartz with Auriferous and Argentiferous Sulphurets: Comstock lode, Storey county, Nev.
 Gold-silver ore, Siliceous rock with Auriferous and Argentiferous Sulphurets: French district, Owyhee county, Idaho.
 Silver ore, Ruby Silver and Stephanite in Quartz: Reese River District, Lander county, Nev.
 Silver ore, Granite rock, carrying Silver Chloride: Colorado.
 Silver ore, Hard Carbonate ore: Leadville, Lake county, Colo.
 Silver-lead ore, Argentiferous Galena: Utah.
 Silver-lead ore, Argentiferous Galena: Hidden Treasure mine, Utah.
 Silver-lead ore, Argentiferous Galena: Montana.

- Silver-copper ore, Argentiferous Chalcopyrite: Pocahontas mine, Fremont county, Colo.
- Lead-zinc ore, Galena and Sphalerite: Portugal.
- Lead-zinc ore, Galena, blende and Mispickel in quartz: Donna Ana county, N. M.
- Lead-zinc copper ore, Galena, Sphalerite and Chalcopyrite: Donna Ana county, N. M.
- Zinc ore, Calamine: Friedensville, Pa.
- Zinc ore, Sphalerite: Friedensville, Pa.
- Zinc ore, Smithsonite: Austria.
- Zinc ore, Willemite, Zincite and Franklinite: Franklin Furnace, Sussex county, N. J.
- Copper ore, Chalcopyrite: Queensland, Australia.
- Copper ore, Chalcopyrite, Donna Ana county, N. M.
- Copper ore, Chalcopyrite: Ely, Orange county, Vt.
- Copper ore, Native Copper in feldspathic conglomerate: Calumet and Hecla Mine, Lake Superior, Mich.
- Copper ore, Native Copper in Melaphyr: Lake Superior, Mich.
- Nickel ore, Nickeliferous Pyrrhotite: Gap mine, Lancaster county, Pa.
- Nickel-copper ore, Nickeliferous Pyrrhotite and Chalcopyrite: Modum, Norway.
- Nickel ore, Oxidized ore (Erythrite, Anabergite, etc.): Lovelocks, Churchill county, Nev.
- Silver-lead ore, Cerussite: Utah.
- Tin ore, Cassiterite with Wolfram and Pyrolusite: Temescal, San Bernardino county, Cal.
- Pyrite, for making sulphuric acid: Rio Tinto, Portugal.
- Pyrite and Chalcopyrite, for making sulphuric acid: Louisa county, Va.
- Iron ore, Red Hematite: Giles county, Va.
- Iron ore, Magnetite: Essex county, N. Y.
- Iron ore, Magnetite: Sweden.
- Iron ore, Hematite, Specular Iron Ore: Marquette county, Mich.
- Iron ore, Siderite: Germany.
- Iron ore, Limonite: Germany.
- Iron ore, Limonite: Lawrence county, Ind.
- Iron ore, Hematite, called Fossil Ore: Tennessee.
- Manganese ore, Impure Wad: Tennessee.
- Manganese ore: Tennessee.
- Ferro-manganese: Italy.
- Native Sulphur: Rabbit Hole mine, Humboldt county, Nev.
- Mercury ore, Cinnabar: California.
- Chromite, Chrome Iron Ore: Shasta county, Cal.
- Anthracite coal, Graphitic: Newport, R. I.
- Anthracite coal: Schuylkill county, Pa.
- Bituminous coal: West Virginia.
- Cannel coal: Kentucky.
- Graphite: Buckingham, Quebec, Canada.
- Emery rock: Chester, Hampden county, Mass.
- Massive Apatite: Canada.
- Kaolin: Lawrence county, Ind.
- Biotite Granite: Red Beach, near Calais, Me.
- Biotite Muscovite Granite: West Concord, N. H.
- Orbicular Granite: Craftsburg, Vt.
- Hornblende Syenite (drift): Cape Elizabeth, Me.

Elaeolite Syenite: Libertyville, N. J.
Olivine Diabase: Mine La Motte, Mo.
Norite: Keeseville, N. Y.
Kersantite: Franklin Furnace, Sussex county, N. J.
Camptonite: Lewiston, Me.
Quartz Porphyry: Ironton, Mo.
Liparite (Rhyolite): Yellowstone National Park.
Liparite (Obsidian): Yellowstone National Park.
Trachyte: Silver Cliff, Col.
Hornblende Andesite: Yellowstone National Park.
Basalt: Yellowstone National Park.
Melaphyr: Brighton, Me.
Peridotite (Picrite): Little Deer Isle, Me.
Peridotite (Dunite): Cullasaja, N. C.
Pyroxinite: Webster, N. C.
Impure serpentine: Chester county, Pa.
Serpentine: Montville, N. J.
Serpentine (variety Williamsite): Fulton, Lancaster county, Pa.
Glaucophane: Sonoma county, Cal.
Gneiss: Montgomery county, Md.
Amphibolite: Hanover, N. H.
Mica Schist: West Washington, D. C.
Quartzite: Potsdam, N. Y.
Steatite (Soapstone): Grafton, Vt.
Crystalline Limestone (Marble): West Rutland, Vt.
Crystalline Dolomite (Marble): Westchester, N. Y.
Ophiolite: Essex county, N. Y.
Limestone (Fossiliferous): Rochester, N. Y.
Limestone (Oolitic): Indiana.
Slate: Buckingham, Quebec, Canada.
Gypsum: Saltville, Va.
Calc Sinter: Yellowstone National Park.
Siliceous Oolite: Center county, Pa.
Sandstone (Triassic): Seneca county, Md.
Sandstone (Subcarboniferous): Berea, Ohio.
Calcareous Conglomerate: Loudoun county, Va.
Rhyolite Tuff: Zacatecas, Mexico.
Infusorial Earth: Pope's Creek, Md.
Infusorial Earth: Nevada.
Oolitic Sand: Salt Lake, Utah.
Shell Sand: Hawaiian Islands.
Lapilli: Mono Craters, Cal.

Respectfully submitted.

E. A. POPENOE,

Professor of Entomology and Zoology
Curator of the General Museum.

Department of Chemistry.

To the Board of Regents:

GENTLEMEN—The following report of the work of the chemical department and suggestions regarding its needs are respectfully submitted:

During four weeks of the fall term, lectures on the chemistry of foods have been given to the third-year class. These lectures treat of the composition of foods and circumstances causing variations in composition; animal nutrition and the principles of feeding; methods of analyzing food substances; special food materials.

Lectures upon agricultural chemistry were delivered to the same students, the third-year class, during the spring term. Some of the topics treated are the origin and composition of soils; soil physics; deterioration and improvement of soils; manures; drainage; tillage; chemistry of plant growth.

The second-year students are assigned to work in the chemical department throughout the year. In the fall term they have a course in inorganic chemistry. This course has varied but little from year to year, and this variation has been mainly in the line of giving more personal attention to the student and in making more of the experimental work. Remsen's "Introduction to the Study of Chemistry" is used as the text. One class hour a day is devoted to recitations, explanations, and experiments in the lecture-room. Each student spends two hours per week in laboratory practice. In this much of the experimental work performed before students at the lecture table is repeated by them in the workroom. Owing to lack of time, they work less independently in this than would be desirable. In the winter term the second-year students give six weeks to the study of common minerals, from lectures and by the use of the blowpipe and reagents. The remaining six weeks of the term are given to organic chemistry. In this no attempt is made to go into the subject fully, but the more common organic compounds are systematically studied, especial prominence being given to their uses in the arts and in common life. Willard's "Organic Compounds of Every-day Life," written especially to meet the needs of these classes, is used as a text-book.

In the spring term these students are in the department two hours per day. Twice each week there are recitations upon and explanations of their work in the analytical laboratory, and the remainder of the time is given to the latter work.

In the absence of Professor Nichols, the instruction in fourth-year physics was given by one of us during the winter of 1895.

The methods employed in these several courses are more fully outlined in the College catalogue. Owing to the size of classes, they are heard in several divisions. The tabular statement below shows the number of students enrolled in our classes, the hours per week of each division, the number continuing in class throughout the term and taking the final examination, and other details:

	No. of divi- sions.	Hours per week.	1894-'95.		1895-'96.	
			En- rolled.	Exam- ined.	En- rolled.	Exam- ined.
FALL TERM.						
Chemistry of foods, four weeks (Failyer)	2	5	67	67	63	63
Inorganic chemistry:						
Lecture-room (Failyer, Willard)	4	5	82	79	102	94
Laboratory practice (Breese)	4	2	82	79	102	94
Special chemistry (Willard)			2	2	6	6
WINTER TERM.						
Physics (Failyer)	2	7	56	56		
Mineralogy, six weeks:						
Lecture-room (Failyer)	4	5	70	70	90	89
Blowpipe analysis (Breese)	4	5	70	70	90	89
Organic chemistry, six weeks (Willard)	4	5	78	76	96	94
Special chemistry (Willard)			3	3	5	5
SPRING TERM.						
Agricultural chemistry (Failyer)	2	5	71	69	50	50
Analytical chemistry:						
Lecture-room (Failyer, Willard)	4	2	77	74	87	83
Laboratory (Breese, Failyer, Willard)	2	8	77	74	87	83
Special chemistry (Willard)			3	3	6	6

We greatly need additions to our museums and to our apparatus, in the form to be accessible throughout the building and permanently placed. The attention of the Board has been called to these needs in previous reports. Our wants in this respect are no less urgent than in the past, but we have so far outgrown our present quarters that we cannot so place our present cabinets as to get full use of them, and true economy would dictate the construction of a suitable building before installing expensive apparatus in permanent place. With the hope that such a building can be erected soon, the above-mentioned additions to our facilities are not asked for now.

Special stress is placed upon the want of another and larger building. It is difficult to present this matter with the full force that it deserves. For while the need as a whole is a pressing one, it is made up of many items, some of which are not of vital importance. But your attention is called to these several items with the assurance that, if you were doing the work demanded of such a department, trying to be at all modern in its equipment and methods, you would feel the importance of each.

The chemical laboratory was built to include as much space as possible for \$7,000, and has nothing to recommend it for its specific use except a convenient floor plan. The building was poorly constructed in the first place, owing to the necessity of getting much

space for little money, and though reshingled and otherwise repaired during its 20 years of use, its roof now leaks in many places, the plastering falls from time to time, and even the walls are seriously cracked. The defective fitting of doors and windows makes the building the dirtiest on the grounds because of dust blowing in. It lodges on the nearly 3,000 reagent bottles, the hundreds of stock bottles of chemicals, the laboratory benches, and the apparatus. From the nature of the work performed in a chemical laboratory, that building should have the most perfect-fitting doors and windows possible. Dirtiness discourages and often prevents accurate work, and it is entirely impracticable to keep things clean under present conditions.

The formation, to a greater or less extent, of poisonous gases is a necessary accompaniment of most chemical work. With proper ventilation, the deleterious effects of these can be reduced to a minimum. In the laboratory used by ourselves and the advanced students there are no special provisions whatever for this purpose. In the main laboratory there are ventilators which in connection with the windows allow free renewal of the air, but, as constructed, the current interferes so much with the flames of the lamps that blowpipe analysis or similar work becomes difficult or impossible on windy days unless the ventilators are closed.

The building is almost wholly without the peculiarities of arrangement deemed necessary in a modern laboratory. This is especially marked in the absence of efficient draft cupboards or hoods in which operations can be carried on which involve the use or production of poisonous or disagreeable gases. The few hoods in the building have been added as makeshift after-thoughts, and are very imperfect in their action and wholly inadequate in capacity, but more or better cannot be put into the present building. To work at a proper advantage, each student in the building should be supplied with water under pressure to operate a filter-pump. The saving of time that this would secure can be appreciated only by those who have worked both ways, but no laboratory can be regarded as anything but antiquated which lacks these facilities. At present we have filter-pumps available for the special students, but even in their case the arrangement is so inconvenient as to make it nearly useless. By a sufficient expenditure for drainage and water-pipes these requisites could be supplied in the present building, but the expense would be more than if installed from the beginning in a new building, and this amount would soon be lost, for we cannot much longer do our work in this building. We should have hydrogen gas and hydrogen sulphide on tap in convenient places in the rooms. The previous remark as to cost applies to these.

Special students ought to have more space for their work than others, yet we are unable to allow it. As a result they are hampered, and when we add to this a lack of sufficient apparatus to enable them to work independently of each other, and the other points previously mentioned, it will be seen that we are in no position to invite students to pursue the study of chemistry beyond the required course. We do the best we can with those who come, but cannot encourage their coming. The lack of suitable space and sufficient apparatus entails, too, a much greater expenditure of time on our part in caring for them than would otherwise be necessary.

We are wholly without private laboratories for ourselves, making it difficult many times to conduct operations requiring special care or privacy where some legal question is being investigated.

The chemical work of the experiment station must now be performed in the room which is also occupied by special students, and is wholly inadequate in size. This work should be done in a room by itself, where the various apparatus necessary can be permanently set up. It should also include commodious cupboards in which samples of fodders, grains, vegetables, etc., can be dried and afterwards stored where mice cannot obtain access. The educational value of museums need not be urged. This is so far acknowledged by all that no argument will be advanced on this point. We have a fairly representative mineralogical cabinet. There are no costly rarities nor gems in the collection, but the ores of the several metals are pretty well represented, and the rock-forming minerals as well as the rocks themselves are shown in medium quality and variety. It, however, needs expansion and amplification in various directions. We should also complete and arrange a museum already under way showing the mineral resources of Kansas. But we are not able, as previously mentioned, to so place the present collections as to be seen well. They are crowded, and some portions are placed in dark corners, where we get but little good of them.

We want to add a more strictly agricultural museum. Of course the soil-forming minerals and rocks are in the general collections arranged systematically. But more instruction can be gained by students and visitors from museums arranged for special purposes. We need both. A collection of minerals and the typical rocks formed by them, along with typical soils resulting from their decomposition, would be of great value.

Other such collections now in progress are, one of manures and fertilizers, showing the raw materials, the prepared articles, and the elements furnished to plants; one of feeding stuffs and foods, showing the crude materials, the prepared products, and the proximate

constituents in proper proportions. Such museums serve as object-lessons, and make a more lasting impression than what is heard or read. But we have no room for these much-needed additions to our museums.

It has been the wish to supplement the lectures in agricultural chemistry with experiments on plant growth, conducted by the members of the classes themselves. This has been absolutely impossible from the lack of room for the purpose. There should be a laboratory in which such work can be done. Either a separate room or a portion of the room designed for advanced chemical work would serve the purpose.

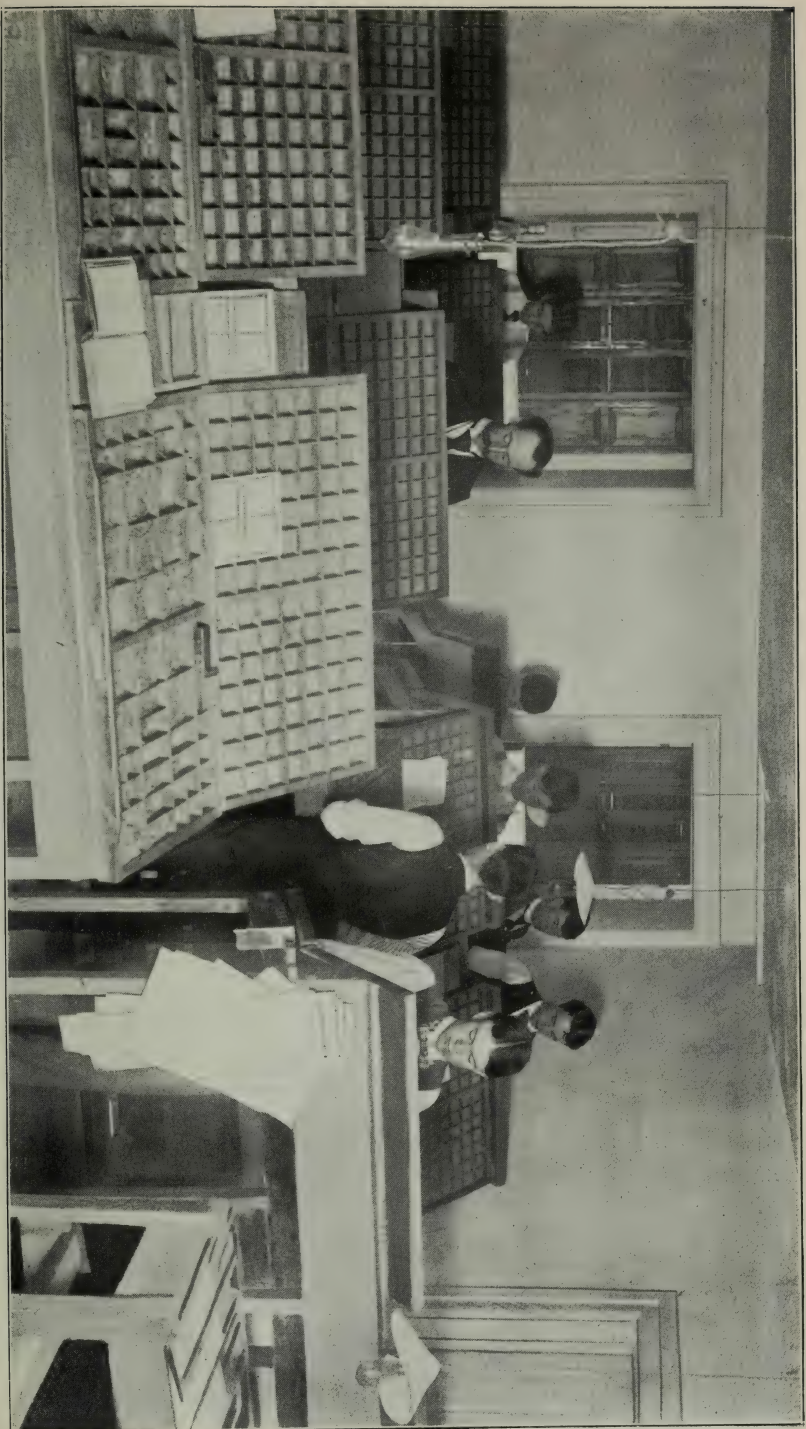
Owing to all the rooms in the present chemical building being occupied with other classes, one of our classes has met for several years past in various other buildings, wherever there happened to be a room vacant at the hour. Apparatus and specimens must then be carried from one building to another between hours, or their use dispensed with, as is too often necessarily the case. Another small class always meets in an office room devoid of the requisites of a recitation room. Our class in chemical analysis has far outgrown the capacity of the laboratory, and we have been compelled to assign two students to a place. They thus use the same reagents, and each suffers from any untidiness on the part of the other. In most laboratories this would not be considered allowable. While we have felt strongly upon this matter, we have had no other alternative. With the rapid increase in size of classes, as the attendance at College increases from year to year, this lack of room will be felt much more than in the past.

Chemistry and physics are the fundamental sciences. On them the biological sciences must build. On them the various arts depend in ways too numerous to recount at this time, and too often unsuspected by the workers therein. The practical value of training in these lines can scarcely be overestimated, as they find daily application in common life. No institution can claim to be doing its part by those who come to it unless it provides adequately for thorough practical instruction in these sciences. The growing needs of our state demand that we should now provide our students with as good facilities for work in chemistry as can be found anywhere. And we hope from all these considerations that you will take steps to provide the much-needed building.

COLLEGE, June 30, 1896.

G. H. FAILYER,
Professor of Chemistry.

J. T. WILLARD,
Assoc. Prof. of Chemistry.



THE PRINTING-OFFICE.

Department of Veterinary Science and Physiology.

To the Board of Regents:

GENTLEMEN — I have the honor to submit the following report of the department of veterinary science and physiology for the two years ending June 30, 1896 :

In addition to the regular classes in this department, I have given instruction to a class in zoology during the fall term of 1894, and to a class in geology during the spring term of 1895. This arrangement was necessary to accommodate changes in the course of study. The following table shows the number of students under my instruction during the past two years, and the classes to which they were assigned.

	1894-'95.				1895-'96.			
	Ladies.	Gentlemen.	Totals.	Divisions.	Ladies	Gentlemen.	Totals.	Divisions.
FALL TERM.								
Zoology.....	29	38	67	2				
Physiology					19	18	37	2
WINTER TERM.								
Veterinary Science.....		43	43	1				
Physiology						42	42	2
SPRING TERM.								
Geology.....	25	43	68	2				

Special students: Veterinary science, 4; physiology, 3. Total, 288.

Instruction in the various branches is given by text-books, supplemented by lectures, except in veterinary science, where instruction is given entirely by lectures. As far as possible, all instruction is illustrated by models, diagrams, anatomical and pathological specimens, and by living subjects. It is intended to make the instruction as practical as possible. In cases where I was necessarily absent from College on other duties, written work was provided, and classes left in charge of some postgraduate student.

The anatomical, physiological and veterinary specimens now occupy some of the cases made vacant by the removal of the general museum to the new quarters. An excellent collection of veterinary specimens has been made, and is being constantly increased.

EXPERIMENT STATION WORK.—Much time has been given to the investigation of animal diseases that are of importance to the livestock interests of this state. Notes are made of all animal diseases which come under my observation, and preserved for future reference. Special investigation has been made of the following diseases: Hog cholera, swine plague, Texas fever, tuberculosis of cattle, mastitis, an

infectious pneumonia of cattle and infectious abscesses of horses, poisoning of domestic animals by various plants, and foodstuffs. Bulletins have been published upon the following subjects: "Cattle Poisoning by Potassium Nitrate in Corn-stalks and Mastitis," and "Corn-stalk Disease in Cattle." On account of the technical nature of the work all investigation has been done without assistance, except such as could be done by student assistance.

LIVE-STOCK SANITARY COMMISSION WORK.—By an act of the legislature of 1895, the office of state veterinarian was abolished and provision was made that "when in the opinion of the members of the state Live-Stock Sanitary Commission there is need of technical knowledge and examination they may call upon the veterinary surgeon of the State Agricultural College and take his opinion thereon." In response to requests from the state Live-Stock Sanitary Commission, I have made 24 trips to various parts of the state to investigate and report upon diseases of animals. In this connection I have been called upon twice to give expert testimony in courts of law. While this arrangement has increased work and responsibility, it affords an excellent and valuable opportunity to investigate those diseases of live stock most important to the great live-stock industry of this state.

In the general college duties, I have contributed to the *Industrialist* and have been chairman of the faculty committee on athletics. I have also served upon other faculty committees. I have lectured in the short course for farmers, and assisted in a number of farmers' institutes and grange meetings and have contributed articles to various agricultural papers in the state, and have answered all requests for advice concerning diseases of animals that have been received.

Respectfully submitted.

NELSON S. MAYO,

Professor of Veterinary Science and Physiology.

COLLEGE, June 30, 1896.

Department of Physics.

To the Board of Regents:

GENTLEMEN—Through your kindness I was granted leave of absence without salary for the school year 1894-'95, with the privilege of beginning my studies in July. This enabled me to spend $4\frac{1}{2}$ consecutive quarters, equivalent to $1\frac{1}{2}$ school years, in the University of Chicago, doing graduate work in physics and mathematics. This gave opportunity for review and extension of knowledge in these sciences, acquaintance with modern methods of research, and the best means of presentation. This increased strength which training gives will, I trust, be a benefit to the nearly 300 different students that I

meet in classes each year. I wish to again thank you for granting my request. During this absence classes in advanced physics were taught by Professor Failyer, all being included in a single term.

My class work the past year is shown in the following table :

Term.	Hour.	Subject.	Class.	Students.
Fall	2d.....	Advanced physics.....	4th year..	33
	3d.....	Plane geometry.....	2d year...	40
	4th.....	Elementary physics.....	1st year...	26
Winter	1st.....	Advanced physics.....	4th year..	56
	3d.....	Plane geometry.....	2d year...	46
	5th.....	Elementary physics.....	1st year...	42
Spring.....	2d.....	Advanced physics.....	4th year..	27
	3d.....	Plane geometry.....	2d year...	39
	5th.....	Elementary physics.....	1st year...	36

Previous to 1894 the course of study provided for physics in the spring term of the third year and fall term of the fourth year, 24 weeks in all. The change that went into effect in the fall of 1894 introduced elementary physics in the winter term of the first year, 12 weeks, and advanced physics was placed in the fall and half the winter term of the fourth year, 20 weeks, giving a total of 32 weeks. While this arrangement has not been in effect long enough to note the results on the advanced students, there can be no doubt about the value of the change to first-year students. This enables nearly every student who enters college to get some knowledge of this very useful and practical subject. A great majority of the frauds under various names, *i. e.*, patent rights, fuel savers, electric and magnetic shields, etc., may be readily detected by an elementary knowledge of physics.

The department needs two large, well-lighted laboratories, equipped with apparatus where students may "learn to do by doing." One of these should be large enough to accommodate from 50 to 60 students at a time in elementary physics. The other should meet all the requirements of from 30 to 40 students in advanced physics. In addition, there should be a dark room for photometry, and a few small laboratories for the use of special and graduate students in special lines of research.

This is probably the only fairly equipped college in this or any other country that pretends to teach physics without laboratory practice. No amount of description can take the place of seeing, and no amount of seeing can take the place of doing. To see the experiment performed by the teacher is better than mere description, but it can never take the place of actual experiment by the student.

The physical-science building, for which \$40,000 is asked, will provide for these pressing needs, besides furnishing better and larger accommodations for the department of chemistry.

Respectfully submitted.

ERNEST R. NICHOLS,

COLLEGE, June 30, 1896.

Professor of Physics.

Mechanical Department.

To the Board of Regents:

GENTLEMEN—I have the honor of submitting the following as the report of the mechanical department for the years 1894-'95 and 1895-'96.

The following table shows the enrollment in the classes of this department:

	1894-'95.				1895-'96.			
	Fall.	Winter	Spring.	Totals.	Fall.	Winter	Spring.	Totals.
INDUSTRIES.								
Wood shop.....	166	135	67	368	169	166	80	415
Blacksmith shop.....	18	54	17	89	15	59	21	95
Foundry.....	7	21	8	36	5	9	8	22
Machine shop.....	8	18	8	34	14	22	17	53
Totals.....	199	228	100	527	203	256	126	585
STUDIES.								
Mechanics, two divisions.....		73		73		77		77
Engineering.....							46	46
Special.....					2	2	2	6
Grand totals.....	199	301	100	600	205	335	174	714

The industrial work for all young men after the fall term of the second year has been placed in the afternoon. Instead of meeting one period each day they now meet $2\frac{1}{2}$ periods twice each week. This is a much better arrangement of time, and tends to increased efficiency of instruction. The reduction of the afternoon industrial period from 60 to 50 minutes makes the whole accomplishment of the student less than heretofore. The distribution of the industrial work through the day allows a more continuous use of our equipment and a larger enrollment.

It has been necessary, owing to the large number in blacksmithing, to have two classes in the afternoon—one from 1:30 to 3:35, and one from 3:40 to 5:45. The work of the later class is retarded in the winter on dark days, and electric lights are very desirable.

There was no class in engineering in the spring term of 1895, as the rearranged course changed the study from the third to the fourth year. Partial preparation was made to take a class in physics at this time, but a further rearrangement of the physics course made this unnecessary. In the iron shop, Mr. H. K. Brooks was appointed foreman in the fall of 1894, and served until offered a better opportunity as superintendent of the Capital iron-works, at Topeka, in the spring of 1895. With some effort Mr. Harrold was induced to return.

The \$1,000 granted by the legislature was used in purchasing a Brown & Sharpe No. 2 universal milling machine and a Walker uni-

versal grinder, each tool the best of its class. The \$1,000 asked for, but not granted, is greatly needed for more lathes of larger capacity.

The most pressing need of the department is a suitable wash- and dressing-room in connection with the iron shop. We have no provision for this need now. It is necessary for 40 or 50 young men to change clothing and remove the grime of iron-work practice at a time when an equal number are changing clothes preparatory to practice. This requires a roomy wash-room, with lockers for each man's clothes.

During the vacation time of the summer of 1895 the department was intrusted with the expenditure of over sixteen of the appropriations, aggregating \$10,000, and covering a wide range of practice both in and out of the shops. The duties and responsibilities of the department have increased in a number of directions. The heating of all buildings connected with the general steam plant has been assumed. All matters of electric power and lighting are in charge of the department, and expenses incidental thereto are assumed as part of the department expenses. Power is furnished to the farm and printing departments and light to the main building, science hall, and engine-room.

In spite of increasing numbers of students and added duties, the expense of the department is substantially the same as for the previous three years. Of the four men employed constantly in the department, the services of the fireman and engineer are chargeable to the general welfare rather than as special help in the work of this department. For six years additional student assistance has been necessary in classes and office, and the time has come when permanent assistance is needed. The actual expense of the department, excluding the salary of the head, was, for 1894-'95, \$2,997.73; and for 1895-'96, \$3,135.41. This expense is divided about as follows:

Wood-shop supplies.....	\$450
Iron-shop supplies.....	150
Instruction.....	1,000
Labor and supplies in heating, power and light plant.....	1,200
Cleaning shops.....	150
Equipment worn out and dropped.....	100

That the expense chargeable to instruction is \$600 less than the salaries of the men employed for that purpose is due to the fact that a considerable portion of their time is employed, when not meeting classes, in such work for the general welfare as brings a credit to the department in either cash or increased inventory. The same is true of the labor of the engineer and fireman, whose combined salaries exceed the net expense of running the heating plant.

Very respectfully, O. P. HOOD.

Department of Mathematics.

To the Board of Regents:

GENTLEMEN—The following statement of classes taught in my department during the biennial period closing June 30, 1896, is respectfully submitted :

CLASSES.	1894-'95.			1895-'96.		
	Ladies.	Gentlemen.	Totals.	Ladies.	Gentlemen.	Totals.
FALL TERM.						
Trigonometry and surveying.....	26	59	85	34	51	85
Geometry, plane.....	11	16	27	11	10	21
Algebra.....	16	34	50	15	23	38
Analytic geometry.....	2	4	6		2	2
Surveying practice.....	25	58	83	33	44	77
WINTER TERM.						
Geometry, plane.....	16	26	42			
Geometry, solid, half term.....	18	36	54	27	34	61
Algebra.....	12	34	46	26	63	89
SPRING TERM.						
Geometry, solid, half term.....	15	19	34	6	19	25
Algebra.....	20	20	40	28	34	62
Surveying practice.....					5	5

Recitations in all classes, except surveying practice, are held five times per week. Surveying practice occupies each student two hours per week. The course followed in the past two years did not materially differ from that explained in previous reports. In addition to the efficient work of the regular instructor, Miss Harper, we have had other assistance. Professor Will taught a geometry class in each of the two fall terms. Fourth-year and postgraduate students had charge of the field-work in surveying in the fall terms; and classes were also organized with teachers and enrollment as follows:

CLASSES.	1894-'95.			1895-'96.		
	Ladies.	Gentlemen.	Totals.	Ladies.	Gentlemen.	Totals.
FALL TERM.						
Arithmetic (Miss Isabel Frisbie).....	7	22	29			
Arithmetic (Mr. J. E. Payne).....	8	35	43	5	31	36
Arithmetic (Mr. T. W. Morse).....				11	31	42
WINTER TERM.						
Arithmetic (Miss Frisbie).....	9	15	24			
Arithmetic (Mr. Payne).....	3	22	25			
Arithmetic (Mr. Morse—two classes).....				5	63	68
Algebra (Mr. Geo. L. Christensen).....				7	24	31
SPRING TERM.						
Arithmetic (Mr. Payne).....	6	15	21			
Arithmetic (Mr. Morse).....				9	35	34

In addition to classroom duties, I have shared in the various re-

sponsibilities resting upon the faculty in committee work, writing for the *Industrialist*, attending farmers' institutes, and other lines.

Respectfully submitted.

D. E. LANTZ,

COLLEGE, June 30, 1896.

Professor of Mathematics.

To the Board of Regents:

GENTLEMEN—The following statement will show the enrollment of students in the classes under my instruction for the biennial period ending June 30, 1896 :

	1894-'95.			1895-'96.		
	Gentlemen.	Ladies.	Totals.	Gentlemen.	Ladies.	Totals.
FALL TERM.						
Algebra, four divisions.....	85	52	137	115	52	167
WINTER TERM.						
Algebra, four divisions.....	62	43	105			
Algebra, three divisions.....				67	46	113
Plane geometry.....				23	7	30
SPRING TERM.						
Algebra, three divisions.....	42	30	72			
Algebra, four divisions.....				69	42	111

In addition to class work, I have assisted in writing for the *Industrialist*, and have served upon various committees of the faculty.

Respectfully submitted. JOSEPHINE C. HARPER,

COLLEGE, June 30, 1896.

Instructor in Mathematics.

Department of Industrial Art and Designing.

To the Board of Regents:

I have the honor to submit the following report of the department of industrial art and designing, for the biennial period ending June 30, 1896. The enrollment for each term and study will appear from this schedule:

1894-'95.

TERMS.	Free-hand.		Mechanical.				Descriptive geometry.....	Topographical.	Postgraduate..	Special mechanics.....	Total.....
	Primary..	Advanced.	First year.....	Second year.....	Third year.....	Fourth year.....					
Fall.....	128	5	59	.....	.....	62	68	.....	3	8	333
Winter.....	6	12	*68	*45	.....	.....	55	*68	3	8	265
Spring.....	8	1	11	31	55	.....	61	.....	4	6	177
Totals.....	142	18	138	76	55	62	184	68	10	22	774

1895-'96.

Fall.....	*166	5	*85	.....	.....	68	21	.....	2	2	349
Winter.....	*18	3	*97	*58	.....	2	.....	*74	3	4	259
Spring.....	4	3	30	23	59	.....	74	.....	3	5	201
Totals.....	188	11	212	81	59	70	95	74	8	11	809

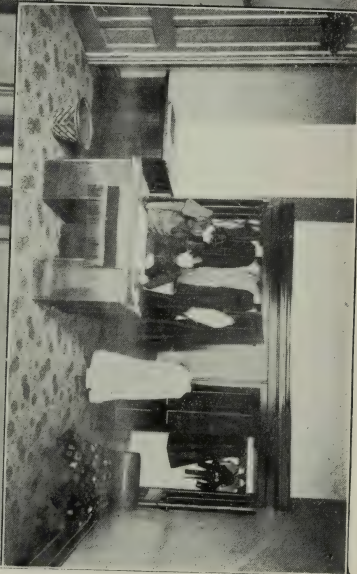
Of the classes marked with a *, those in primary free-hand drawing met three times per week. The first- and second-year classes in mechanical drawing worked but half a term. The classes in topographical drawing worked on afternoons and Saturdays. All other classes met daily.

For a detailed report of the work of these classes, I refer you to the annual catalogues of the two years and to my former reports. As most of the finished plates were on exhibition in my classrooms during commencement, and have undoubtedly been inspected by you, I will not enlarge here upon this work.

The revision of the course of study of the College, made in 1894, added one term of descriptive geometry and one term of object drawing to the work of the department, while it reduced the term of geometrical drawing from 14 weeks to 6 weeks. These changes have greatly increased the efficiency of the course in drawing, but they have also increased the work in instruction to a considerable extent, and have made necessary the fitting up of the attic of the main building for draughting-rooms and classrooms. It also became necessary to provide additional assistance and to procure additional means of illustration, models, and furniture.

The increase in the equipment of the department has been chiefly in the branches of descriptive geometry and machine drawing. There have been added a set of Prof. A. Emch's string models illustrating warped surfaces and intersections of curved surfaces, a set of geometric solids representing polyhedrons, interpenetrations, and double curved surfaces, a complete upright eight-horse-power engine, and a complete iron lathe. Yet, many other things are needed in order to fully equip the department for the work it must do. There ought to be added at once about 25 classroom desks, with seats, one blue-print frame, measuring 36 by 60 inches, a set of models for the work in sketching from the object, a set of models of electric motors, and a number of measuring tools. I would also recommend the immediate construction of satisfactory stairs to the attic floor. The present stairs are too narrow, dark and weak for the use of large classes.

Of my work outside the classroom, but directly in the interest of the College, I can mention a lecture on "The Campus," read before the State Historical Society; an address on "The Industrial Wars of the Future," before the old settlers' reunion at Randolph; a lecture on "Health and Wealth," read before the Riley county teachers, and my participation in several farmers' institutes in different parts of the state. I also read a paper at each of the "Short Courses for Farm-



THE SEWING-ROOM.

ers," held at the College ; served on three standing committees of the faculty, edited an occasional column of "Kansas Educational Notes" for the *Industrialist*, read all educational exchanges, and assisted Professor Brown in the organization of the orchestra by playing the contrabass. I have also served as a director to the State Historical Society, and as the committee on landscape-gardening of the State Horticultural Society. I may also mention the preparation of a series of text-books on free-hand drawing and graphics.

In the work of instruction I have been assisted by the following postgraduates : Miss Phoebe E. Haines, M. Sc., Mr. L. P. Brous, M. Sc., Mr. Con M. Buck, B. S., and Miss Maud Gardiner, B. S. All of these have assisted me cheerfully and efficiently. The work of instruction has increased to such an extent, however, that more permanent help will have to be provided before long.

Respectfully submitted.

J. D. WALTERS,

Professor of Industrial Art and Designing.

COLLEGE, June 30, 1896.

Department of English Language and Literature.

To the Board of Regents:

GENTLEMEN—We have the honor to submit the following report of work in the English department :

The studies in this department include grammar, analysis, English structure, composition, rhetoric, and literature. Grammar as a preparatory study has been carried throughout the year. Analysis is studied in the fall term of the first college year, composition in the winter, and English structure in the spring term. For the convenience of all, the first-year classes are so divided that half take structure and half take composition in the winter term, exchanging these studies in the spring term, so that students can take either study in either term. The course in analysis is now given in the winter term also, enabling students who cannot enter in the fall term to have an opportunity to carry forward their English work in order.

Because of the amount of work in the department, postgraduate help has been provided for some of the grammar classes of the first year.

In the rearrangement of studies, made to take effect last year, rhetoric is now placed in the spring term of the third year and En-

glish literature in the fall term of the fourth year. In addition to this course, the young ladies have in the spring of the fourth year a term in nineteenth-century literature.

Classes in special English literature have also been formed each fall and spring term.

The classes of each college year receive instruction and drill in rhetoricals once a week. This work includes declamation, essay writing, debate and interpretive reading in the first- and the second-year classes, with the addition in the higher classes of the preparation and public delivery of original orations. The work of the fourth-year class for the two years has been with Professor White. For the year 1895 Professor Jones had charge of this work for the third-, the second- and most of the first-year class. Professor Jones resigned his position at the end of the year, and for the past year the rhetorical work of these classes has been divided. The third-year class and some divisions of the second-year class were taught by Prof. T. E. Will, while the remainder were under the charge of Mr. George L. Clothier.

The arrangement of classes under the direct charge of the department, the enrollment and the division of work are shown in the following table :

BRANCHES.	1894-'95.			1895-'96.		
	Gentlemen.	Ladies.	Totals.	Gentlemen.	Ladies.	Totals.
FALL TERM.						
Grammar (Rupp).....	63	10	73	77	19	96
Analysis, four divisions (Olin, Rupp).....	91	60	151	106	61	167
English literature (Olin).....	22	22	45	45	29	74
English literature, special (Olin).....	2	3	5	1	1	2
Rhetoricals, first year (Rupp, Clothier).....	48	8	56	110	59	169
Rhetoricals, second year (Clothier).....				27	22	49
WINTER TERM.						
Grammar (Rupp).....	53	8	61	72	11	83
Analysis (Olin, Rupp).....	35	16	51	63	18	81
English structure (Rupp).....	41	32	73	25	20	45
Composition (Olin).....	46	42	88	87	49	136
Rhetoricals, first year (Rupp, Clothier).....	31	5	36	165	68	233
Rhetoricals, second year (Clothier).....				41	18	59
SPRING TERM.						
Grammar (Rupp, Harner).....	19	8	27	33	11	44
English structure (Rupp).....	38	32	70	74	44	118
Composition (Olin).....	30	16	46	32	13	45
Rhetoric (Olin).....	51	35	86	32	28	60
English literature (Olin).....				1	26	27
English literature, special (Olin).....	1	1	2	4		4
Rhetoricals, first year (Rupp, Clothier).....	16	7	23	129	71	200
Rhetoricals, second year (Clothier).....				16	14	30

In addition to the work shown, we have done the usual writing for the *Industrialist*, and have served on committees of the faculty. The

department has also been represented at farmers' institutes and various educational associations.

Respectfully submitted.

OSCAR E. OLIN,

Professor of English Language and Literature.

ALICE RUPP,

Instructor in English.

COLLEGE, June 30, 1896.

Department of History and Political Science.

To the Board of Regents:

GENTLEMEN:—The following table presents the work done in my department during the past two years:

CLASSES.	1894-'95.				1895-'96.			
	Gentlemen.	Ladies.	Totals.	Divisions.	Gentlemen.	Ladies.	Total.	Divisions.
FALL TERM.								
General history, third year.....	36	59	95	2	32	36	68	2
United States history, special....	4	18	22	1	13	19	32	1
Rhetoricals, fourth year.....	24	41	65	2	30	47	77	2
WINTER TERM.								
Civil government and political history, third year.....	33	55	88	2				
United States history, special....	5	27	32	1	7	39	46	1
History of science and industry, fourth year (half term).....					24	47	71	2
Rhetoricals, fourth year.....	23	40	63	2	26	49	75	4
SPRING TERM.								
Logic, fourth year (half term)...	24	38	62	2				
United States history, special....	4	5	9	1	8	11	19	1
Civil government and political history, third year.....					30	33	63	2
Advanced United States history, special class.....						2	2	1
Rhetoricals, fourth year.....	23	41	64	2	26	48	74	3
History of science and industry, fourth year (half term).....	24	38	62	2				

During the past two years the instruction given in history has been increased in amount by a course which, for convenience, is entitled "The History of Science and Industry." This course consists, first, of a series of lectures on the intellectual development of our race, with especial attention to changes in scientific methods, the growth of the sciences, and the effect of this growth on civilization; second, a course of lectures supplemented with a text-book on the industrial development of the world, with especial attention to the growth of the leading industries of the United States. As but six weeks are allotted to this course no attempt is made to treat the subjects exhaustively, and yet it is believed good must result even from so rapid a view.

The course in general history has been made more attractive and

helpful by the use of the charts, etc., purchased with the \$50 appropriated by the last legislature. Instruction in elementary United States history is now confined to the preparatory students. Last year I prepared a supplementary text-book for the use of this class which seems to meet a real want both here and elsewhere. Some improvements have also been made in presenting the subject of civil government and political history of the United States, but the one term allotted to this subject is found to be a small allowance.

The fourth-year rhetorical work is entirely in my hands and consumes much time. At the last commencement public orations by the graduating class were for the first time dispensed with. Each student was required, however, as for several years past, to prepare a commencement thesis embodying the results of careful investigation, and to deposit a copy in the College library.

I have written the usual number of editorials for the *Industrialist* and have served on the following committees: Grades and examinations, public exercises, *Industrialist*, and catalogue. Besides these College duties, I have read papers at farmers' institutes, addressed a good-citizenship society, and acted as judge in certain rhetorical contests.

Respectfully submitted.

FRANCIS H. WHITE,

COLLEGE, June 30, 1896.

Professor of History and Political Science.

Department of Economic Science.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the report following of my work during the two years of my connection with the College. The accompanying table indicates the subjects taught and the number of students in attendance upon the different classes in my charge:

CLASSES.	1894-'95.				1895-'96.			
	Ladies.	Gentlemen.	Totals.	Divisions.	Ladies.	Gentlemen.	Totals.	Divisions.
FALL TERM.								
Political economy, advanced . . .	1	3	4	1	3	8	11	1
Geometry . . .	8	21	29	1	7	7	14	1
Physics, elementary . . .	11	23	34	1				
Rhetoricals . . .					44	58	102	4
WINTER TERM.								
Political economy, advanced . . .	1	3	4	1	1	8	9	1
Physics, elementary . . .	22	24	46	2				
Political economy, elementary . . .					33	46	79	2
Rhetoricals . . .					41	53	94	4
SPRING TERM.								
Political economy, advanced . . .					2	13	15	1
Physics, elementary . . .	24	13	37	1				
Political economy, elementary . . .	21	48	69	2	26	32	58	2
Rhetoricals . . .					50	70	120	5

The work of economic science was deemed by the Board of sufficient importance to justify its erection, two years ago, into a separate department, on the ground that the welfare of the agricultural and industrial classes is dependent not less upon their familiarity with the sciences of distribution and exchange of wealth than with the art of wealth production.

The department has been somewhat embarrassed through partial inability to specialize in its own proper field. The original course of study being already well filled, it was regarded impracticable to introduce more regular studies in economics than the single term for fourth-year students already required; and, other departments needing assistance, the teacher of economics has devoted a large portion of his time to instruction in physics, geometry, and rhetoricals. (See above table.)

Nevertheless, by the wide introduction, one year ago, of elective studies for postgraduates, fifth-year students, and fourth-year students capable of assuming extra duties (see catalogue, pp. 32-33), an opportunity has been afforded for the very considerable extension of the work in economics and finance—an opportunity that has been improved by the department and by a considerable number of students. By means of these elective studies, new advanced work has been given each term successively without duplication since the fall of 1895; and other new work is offered for the next year. (See catalogue, page 59).

By setting back the required term of elementary economics from the spring term of the fourth to the spring term of the third year, the way has been opened for the capable student so desiring to devote one continuous year to advanced economic study; and should he remain in college another year, a second year in advanced study is open to him.

One source of serious embarrassment to the department has been the lack of library facilities. Some departments must necessarily be supplied not only with literature but with expensive laboratories and equipments. The economist's laboratory is his library. If this be seriously deficient his work must inevitably suffer. The specialist's library is but an enlarged form of dictionary or cyclopedia. If from either a necessary part is wanting the presence of other parts affords but slight compensation.

Two years ago the College library was almost destitute of economic literature. But for the valuable privilege of access to the President's private library, advanced work could hardly have begun. Additions carefully selected have since been made from meager appropriations. The crying need of the department is still books and wider opportunity to use them.

The work of the department represents no distinctive economic school. The attempt is made to display all available facts pertaining to a subject; to try the conflicting theories by the facts; to cultivate tolerance in the examination of views and theories, and to encourage the student to form an honest and intelligent judgment on the question in hand.

In addition to the above-mentioned class work, the writer has served on two committees, given four lectures at farmers' institutes, two at teachers' institutes, two in the "short course," several before miscellaneous gatherings, and 25 in the College chapel. In addition, he has contrived to do some literary work, a portion of which has been given to the press.

Respectfully submitted.
COLLEGE, June 30, 1896.

THOMAS E. WILL,
Professor of Economic Science.

Department of Household Economy and Hygiene.

To the Board of Regents:

GENTLEMEN—My report of the work done in the department of household economy and hygiene during the two years ending June 30, 1896, is respectfully submitted. The following table gives the numbers in classes during the two years:

	1894-'95.			1895-'96.		
	Fall.	Winter	Spring.	Fall.	Winter	Spring.
Special cooking.....	19	12	13	21	15	13
Hygiene.....			20	27		
Household economy and cooking.....		26			35	
Dairy.....			28			30
Postgraduates.....	10	10	9	10	9	10

The rooms in which the work is carried on have become entirely too small for the large classes. They are also inconvenient for the work, and it is the earnest hope of both teachers and pupils that new and better quarters may be provided before the end of another year.

Miss Ruth T. Stokes, who has been the very able and efficient assistant during the two years, will teach in the manual-training school of Toledo, Ohio, during the coming year.

During the fall term of 1894 the work was simply that of teaching the classes in special cooking, composed of pupils who, having had the regular terms of second-year household economy and dairying, chose cooking as an industrial. The postgraduate students were ready for help this term also.

The industrial classes in cooking spent one-half the term in work on fruits, which they canned, preserved, pickled, and jellied. They then had some experience in making mince-meat, after which they took up the making of fancy breads and the cooking of meats. One lesson when they begin the meats is the cutting up of an ox before the class, to teach them the various cuts of meat as found in the market.

The fall-term work of 1895 was varied from that of the previous year by the changing of the class in hygiene, which had formerly been in the spring term of the third year to the fall term of the fourth year. This change gives 14 weeks to the work instead of 10 as before. The young women listen to lectures four days in the week and bring essays on the fifth day. These essays are upon subjects given by the teacher, and contain knowledge gleaned from books of reference in the College library.

The postgraduate students give three hours each day for two years, during which time they become proficient in sewing and household economy. They cook food in many forms, and write full essays on the various kinds of food.

The winter term of each year gave full classes. The regular second-year class in household economy take one lecture each day on foods. They also cook one hour each day in the kitchen laboratory. During the winter term this class serves a dinner once each week for several members of the faculty, who pay 20 cents each for the meal. They also serve two lunches each week for students, which are arranged for by the sale of tickets, for which students pay 10 cents each. These lunches consist of sandwiches and coffee, with cake, pie, or pudding, varied as the class cooks different materials. The price charged for these dinners and lunches gives about money enough to pay for the materials used. In the spring term, the same second-year class which had household economy in the winter term has one term of work one hour each day which we call dairying. Two weeks are spent in the dairy, during which time each student skims milk, churns, salts and works the butter. She makes cottage cheese several times, and during the term the whole class sees made two or three small cheeses. The remaining time of the term is spent in cooking, many dishes requiring the use of milk and cream being taught. As the dairy is very small, this class is arranged in small divisions, each division working in the dairy one week at a time, all the other divisions working in the kitchen laboratory.

During the two years there have been many opportunities for members of classes to gain experience in the preparation of tables for guests and the serving of refreshments for companies. The usual

breakfast, dinner and tea were served for the whole faculty and their wives when they met the Board. Here the postgraduate students had practice in presiding at the table, while the special students served the meal.

Receptions for the senior class in the office belonging to the department give practice in serving light refreshments.

During the winter of 1894-'95 a banquet was cooked and served to invited guests at the time of dedicating the library and museum building, and during the last year the class gave a lunch to the commercial club of Kansas City.

Refreshments prepared for several parties have given practice in the preparations to be made for entertaining evening guests.

It may be of interest to state that during the two years there have been used in the department 2,400 pounds of flour, 2,000 pounds of sugar, and 623 dozen eggs, while about \$200 have been spent for meat. The cost of the department for the two years is shown below :

New equipment and repairs.....	\$70 49
Materials for cooking.....	1,023 82
Milk.....	122 37
Ice.....	29 24
Paper.....	12 95
Salary of assistant.....	450 00
Student labor.....	160 07
Total cash expenditure.....	\$1,868 94
Decrease in inventory.....	53 15
Receipts from lunches, dinners, etc.....	905 71

During the two summer vacations I have tried to keep in touch with the special work being done in this line in other places. I visited cooking schools in England, France and Holland during the summer of 1895, and this year I expect to attend the Cooking School Teachers' League, which meets at Chautauqua, N. Y., hoping by such means to keep our class work fully equal to that done anywhere.

The success which our graduates have had teaching in this line is most gratifying.

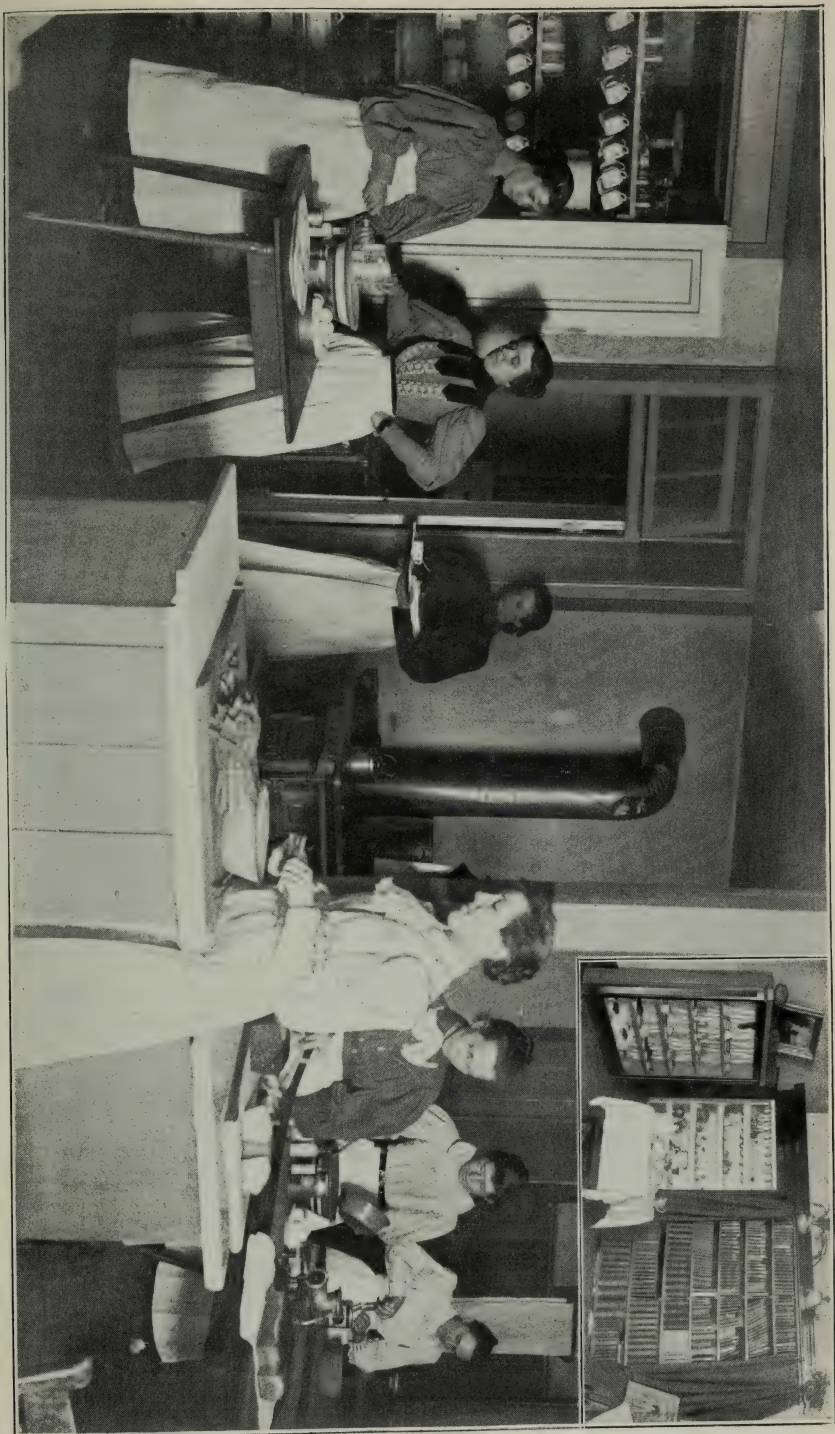
During the two years I have taken my share of work on faculty committees, on *Industrialist* work, in the "short course" lectures, and in farmers' institutes.

Respectfully submitted.

NELLIE S. KEDZIE.

Professor of Household Economy and Hygiene.

COLLEGE, June 30, 1896.



Sewing Department.

To the Board of Regents:

GENTLEMEN—The following report of work done in the sewing department for the two years ending June 30, 1896, is respectfully submitted.

The enrollment of classes is as follows:

	1894-'95.	1895-'96.
Fall term.....	135	145
Winter term.....	100	110
Spring term.....	108	117

Miss Little resigning her position as assistant, Miss Laura Day was employed for the year ending June 30, 1895. Then she was called to fill a position as teacher of cooking and sewing in the Stout Manual Training School, at Menomonie, Wis., and Miss Frisbie was appointed to fill the place.

The five regular classes of the morning were large, and an average class of 10 or 12 postgraduates, with the fourth-years, were assigned to the afternoon work.

The work of the department involves, as in past years, the making of all kinds of garments, much time and attention being given to plain hand work and machine stitching, with care in putting the different parts together. Many of the girls have learned to cut and fit their own dresses, making over 200 dresses during the year. About 5,000 yards of goods were cut and made into garments each year. The greater proportion of the girls furnished their own materials and worked for themselves.

The following will show the expenditures of the department, aside from the salary of the superintendent:

	1894-'95.	1895-'96.
EXPENDITURES.		
Assistant's salary.....	\$270 00	\$270 00
Materials.....	30 85	29 22
Department bills.....	6 53	2 70
Inventory decrease.....	6 00	22 75
Totals.....	\$313 38	\$324 67
RECEIPTS.		
Cash credits.....		37 65
Actual expense.....	\$313 38	\$287 02

Respectfully submitted.

ELIDA E. WINCHIP,
Superintendent of Sewing.

COLLEGE, June 30, 1896.

Printing Department.

To the Board of Regents:

GENTLEMEN—The work of the printing department for the biennial period ending June 30, 1896, differs in no essential particular from that of previous years. The attendance has remained stationary, and the interest has neither grown nor abated. As it is, but few more students could be accommodated at any time, while some classes, especially during the winter term, test the capacity of classrooms and elasticity of apparatus. Classes were mixed, as they must of necessity be in most lines of industrial work in the course of study as it now stands, including every grade from "B" to fourth-year students, in many cases the two extremes, with students of intermediate grades, coming together in the same class, making necessary the assignment of a wide diversity of tasks suited to the various needs.

The beginners are required to give the first term to punctuation, in connection with exercises in typesetting, thus emphasizing and fixing the daily lesson as no other plan could do. The terms devoted to the study and practice of punctuation many students esteem the most valuable in their printing "industrial." The advanced students are given work on the *Industrialist*, and in designing and composing a large variety of typographical forms, requiring in their proper construction the exercise of no small degree of skill.

Outside of class work, my duties have been the writing and editing of the local page of the *Industrialist*, which has been contributed to freely by other members of the faculty, the assistants, and the student editors. I have also taken my part in the editorial writing for the paper. Routine office work has filled the time not otherwise occupied.

The *Industrialist* has been printed weekly during the College year. It has had a regular circulation of 2,200, besides the double-size special editions of 10,000 and 20,000 each year. The cost of the paper to the College for 1894-'95 and 1895-'96 has been \$845 and \$857, respectively. This, it seems to me, is a reasonable price, since the cash subscriptions have been few, and the quality of materials the best. Much of the labor on the paper was hired, the students being paid for it at the rate of 10 cents an hour during term time.

The *Industrialist* brings College, student and patron into intimate relation, and extends the influence of the institution in a considerable degree.

It was necessary, in 1895-'96, for the first time in the 10 years of my superintendency, to look outside of classes for a foreman; Mr. F. J.

Smith, a member of the class of '95, and student foreman in 1894-'95, was employed while a postgraduate student, and rendered most efficient service.

FINANCIAL STATEMENT.

RECEIPTS.

1894-'95.

Department transfers.....	\$274 47
Cash.....	141 25
Balance, expense.....	845 54
Total.....	\$1,261 26

EXPENDITURES.

Paper.....	\$482 73
Labor.....	612 95
Postage.....	64 24
Freight.....	40 50
Ink, press, and office supplies, etc....	42 66
Inventory decrease.....	18 18
Total.....	\$1,261 26

RECEIPTS.

1895-'96.

Department transfers.....	\$318 87
Cash.....	151 80
Balance, expense.....	857 69
Total.....	\$1,328 36

EXPENDITURES.

Paper.....	\$447 57
Labor.....	686 00
Postage.....	25 01
Freight.....	41 97
Ink, press, and office supplies, etc....	34 79
Department transfers.....	62 05
Inventory decrease.....	30 87
Total.....	\$1,328 36

Respectfully submitted.

COLLEGE, June 30, 1896.

J. S. C. THOMPSON,

Superintendent of Printing.

Department of Music.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of the department of music, vocal and instrumental, for the years 1894-'95 and 1895-'96.

CLASSES.	1894-'95.			1895-'96.		
	Ladies.	Gentlemen.	Total.	Ladies.	Gentlemen.	Total.
FALL TERM.						
Singing classes B (Wednesday and Friday).....	27	70	97	25	95	120
Singing class A (Thursday).....	22	13	35	20	11	31
Piano and organ.....	40	8	48	42	13	55
Orchestral instruments, guitar, etc.....	30	13	43	24	36	60
Band instruments (B band).....		16	16		22	22
College orchestra.....	6	12	18	9	12	21
College cadet band.....		15	15		18	18
Totals.....	125	147	272	120	207	327
WINTER TERM.						
Singing classes B (Wednesday and Friday).....	32	54	86	16	58	74
Singing class A (Thursday).....	13	14	27	9	9	18
Piano and organ.....	39	15	54	45	14	59
Orchestral instruments, guitar, etc.....	12	28	40	29	28	57
Band instruments (B band).....		15	15		17	17
College orchestra.....	4	15	19	3	16	19
College cadet band.....					19	19
Totals.....	100	141	241	102	161	263
SPRING TERM.						
Singing classes B (Wednesday and Friday).....	9	17	26	16	19	35
Singing class A (Thursday).....	18	12	30	22	16	38
Piano and organ.....	40	12	52	35	12	47
Orchestral instruments, guitar, etc.....	19	17	36	20	21	41
Band instruments (B band).....		16	16		18	18
College orchestra.....	7	17	24	8	16	24
College cadet band.....		18	18		22	22
Totals.....	93	109	202	101	124	225

The enrollment in the instrumental department has steadily increased, until now it is impossible to accommodate all the pupils desiring an assignment to the piano as an industrial. For this reason many ladies who desire an assignment to the piano are compelled to select some other instrument or change their industrial.

For efficient work with present enrollment the instrumental department greatly needs, not only more pianos, but more room for practice, to accommodate its classes on mandolin, guitar, and other orchestral instruments.

Pupils assigned to instrumental music receive weekly instruction; those who take it as an industrial are required to practice at least one period—50 minutes—per day, at the time and place assigned; those who take it as an extra are expected to practice same amount, but at time and place most convenient.

The instruction in this department includes a knowledge of the instruments and their parts; how to care for and tune the same; a correct and systematic method in technical drill; such attention to harmony, analysis and phrasing as will enable the pupil to take up advanced studies and solo work to advantage. When the pupil is sufficiently advanced, musical composition is introduced as a part of the work, and such amount is given as is compatible with the time of the pupil.

Pupils taking vocal music are assigned to one or more of the classes which meet on Wednesday, fifth hour in the forenoon, and on Thursday and Friday, at 1:30 o'clock p. m. For special occasions, quartets, octets, etc., are organized by selecting members from the above classes.

Instruction in this department, class B (elementary), includes a knowledge of the vocal instrument, how to use and care for the same; sound, illustrated by monochord, siren, and other apparatus; pitch, scale and chord relation; rhythm, accent, value, and measure. Tonic sol-fa, syllabic and clef notations are analyzed and compared. Drill is given in transposition and modulation, with exercises in sight-reading in the above notations, by letters, numerals, syllables, and words. Class work A (advanced) reviews briefly the elementary work of class B, with additional exercises in sight-reading for training eye and ear, and a careful study, in style and expression, of selections, sacred and secular, interspersed with solo and quartet singing, with and without instrumental accompaniment.

Pupils who are sufficiently advanced to join the College orchestra, which has its rehearsals on Thursday afternoons, or the College cadet band, which practices in connection with the military drill, may become members by assignment. The purpose of the above rehearsals is to secure an intelligent conception of the work to be studied, de-

velop and cultivate the proper rhythmic feeling, and by careful drill attain the skill, unity of thought and action so essential to the proper expression of the emotion.

In addition to my regular class work, as a member of the committee on public exercises and College socials, some time has been given to the preparation of the musical parts of the several programs. I have assisted the College societies in the preparation of their music for annual exhibitions, special and joint sessions, and the fourth-year classes in the preparation of their original music for class-day and commencement exercises. I have contributed to the *Industrialist*, and furnished one or more selections for the Saturday afternoon lectures and rhetorical exercises.

The department has furnished music — vocal, piano, orchestral, and band — for the weekly course of lectures, rhetorical, College socials, the exercises of commencement day and week, the inspection ceremonies and public military parade of the College cadets, and for all the other College exercises of public and general interest. In the above work, Miss Lorena M. Helder has rendered efficient assistance.

Respectfully submitted.

A. B. BROWN,

COLLEGE, June 30, 1896.

Professor of Music.

Military Department.

To the Board of Regents:

GENTLEMEN—The following report of the military department is respectfully submitted, covering the period from July 1, 1894, to June 30, 1896:

Commencing with the fall term of 1894, by your action the students of the first and second years were required to be instructed in drill as part of the course of the College.

Recognizing that the government, the College and the students were each entitled to certain considerations, I have endeavored to keep in view the interests of each; and believing that physical and mental development must go together, hand in hand, as it were, I have devoted more time to the minor exercises, with a view to physical development, than for the purpose of imparting a purely military spirit to the students, not ceasing, however, to instill into them that they are the present rising generation; that the government established this and similar institutions for the purpose, but by no means for the sole purpose, of teaching them that in the event of an invasion or rebellion they must be depended upon as the ones who are to protect our republican form of government.

Before your action making drill a part of the course of instruction it was voluntary. When I came here, March 1, 1894, there were but 28 taking drill. In the spring term, same year, the number had increased to 84, and but 50 participated in the commencement military drill exercises.

The average number of students per term who have received some instruction, commencing with the fall term of 1895, in physical development and drill is 210, 190 participating in commencement exercises.

In the winter of 1895, 58 second-year students were instructed by lecture in military science, and in the winter of 1896, 60 were similarly instructed in the same subject.

In the winter term it was deemed advantageous to have the first-year students recite at least one hour per week upon the United States drill regulations; 104 of the class were so instructed, not so well as I would have desired, for the reason that it was difficult to obtain a text-book early enough to make much progress.

I would renew my recommendations heretofore made, that sufficient space upon the College property be set apart for the purpose of establishing a target range; also that the national flag be raised over the main building daily, in fair weather, not as now, only when the Regents are in session.

From the very satisfactory results obtained from the experience of the last two years in the military department, and the apparent great good derived from the exercise necessary in drill, I would earnestly suggest and recommend that the drill be required, or compulsory, for the entire time of four years for all male students at the institution, and that, instead of 32 lectures on military science for the second year only, it be continued for the four years, at least one hour per week.

I submit herewith a bill formulated by me and presented to the last legislature of the state, which, to my mind, would be of great assistance and advantage to the College.

If the Board deems it of sufficient importance that the department be improved, I would request that about \$1,000 be asked for from the legislature for the purchase of additional uniforms, the present number, 200, being insufficient, or that the passage of the bill referred to above be urged by the Board.

The expenditure for the department, appropriated by the legislature for the purchase of 200 uniforms, was \$1,500; from the College fund for the current expenses, \$338.44; credit for sale of old uniforms, \$40.50.

H. G. CAVENAUGH,

Captain Thirteenth U. S. Infantry,
Professor of Military Science.

AN ACT

Making the corps of cadets at the Kansas State Agricultural College a provisional battalion of the Kansas national guard and for officering and equipping the same, and to further carry out the provisions of the act accepting land for the establishment of an agricultural college.

Be it enacted by the Legislature of the State of Kansas:

Section 1. That the cadets attending the Kansas State Agricultural College shall be organized into a provisional battalion of the Kansas national guard, consisting of one or more companies, the military duty to be performed by said battalion to consist only of that which already is or may be established by the rules of the College.

Sec. 2. Said battalion shall be organized into companies, the officers of which shall be appointed and commissioned by the governor of the state, on the recommendation of the President and the military professor of the said College, made after an examination into the moral, physical and mental qualifications, mental examination to be in writing and on subjects confined to those taught in the military department of the college. The noncommissioned officers shall be appointed on the recommendation of the military professor, by the President of the College, who shall have power to reduce any of the said noncommissioned officers for sufficient cause. The severance of connection with the College shall vacate any officer's commission.

Sec. 3. It shall be the duty of the adjutant-general of the state of Kansas, upon requisition duly made by the President of the said Agricultural College, to furnish for said battalion all arms, uniforms and other equipment necessary to arm and equip said battalion.

Sec. 4. No compensation for any services rendered by the said cadet battalion shall be paid by the state, nor shall any officer or member of said battalion receive any other reward or emolument than as provided by this act by reason of his connection with said battalion.

Sec. 5. The governor may order the state inspector of the national guard once each year to inspect the said cadet battalion and to report the result of his inspection, and to make such recommendation as he shall deem best for the interests of the said battalion.

Sec. 6. This act shall take effect and be in force from and after its publication in the official state paper.

Library.

To the Board of Regents:

GENTLEMEN—The following is a report of the present condition of the library and its growth for the past two years.

During the summer of 1894 the library was moved from its old quarters in a recitation room of the main building to the new rooms in science hall. The old system of classifying the books by alcoves could not be adjusted to the new room with its patent book shelving, and the 14,000 and more volumes were rearranged by the Dewey decimal classification. The books and pamphlets, which before, for lack of room, had been stored away, were brought forth and placed on the shelves, and the whole library made much more accessible. The

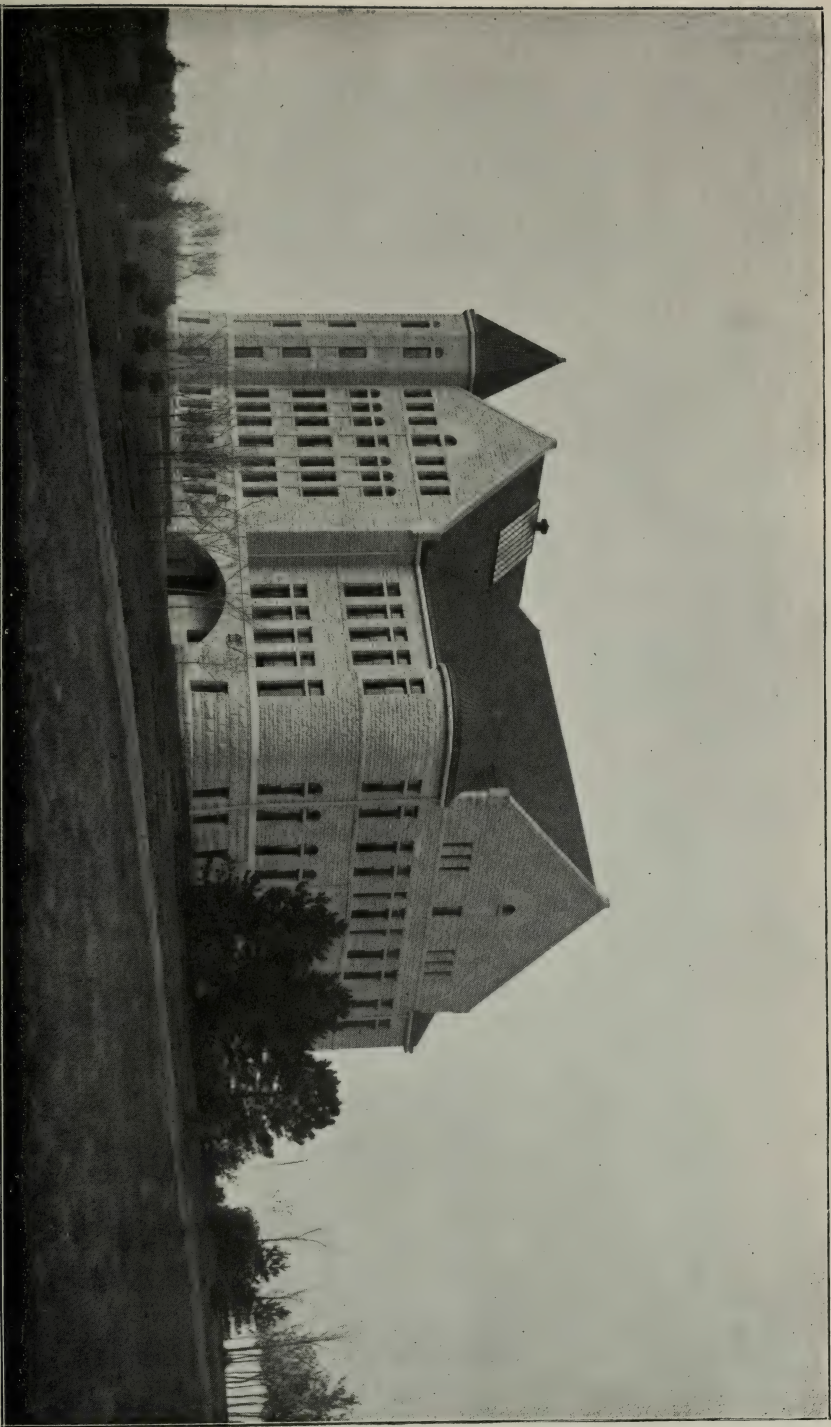
result of this improvement was felt at once in the increased use of the books and the number of frequenters of the library.

With the \$500 appropriated for furniture by the legislature, in the winter of 1894-'95, matting and carpet, chairs and tables, and a charging case and equipment, and with aid from the College fund an exchange was made of the old Hammond typewriter for a new No. 6 Remington. Three of the tables have been put in the reading-room and chairs for about 15 readers, all the room will accommodate. Each term from half a dozen to 20 or more books chosen as books of reference for a course of reading for some class are placed on some one of these tables and that table reserved for the use of that particular class. As we often have six or more classes following a course of reading at one time, one table is all that can be allowed to any one class. The classes often number 45 or 50 students, and this does not furnish the requisite accommodation for reading and studying. The small reading-room provided is found to scarcely meet the wants of even one class at a time. The attention of the Board is called to the need of reading-rooms where shelves can be furnished for the reference books for each term's work, so that one room can be given up to a class. We need several reading-rooms, where students will not be disturbed by the constant going and coming of those looking for books on the shelves. A separate reading-room for newspapers is badly needed.

The confusion and noise of rustling newspapers in the hands of 12 or 15 readers is a serious annoyance to those at work in other lines.

The fire-proof basement under the west end of the library has been provided with a makeshift for shelves, made of old boards and shingle boxes, for the storage of pamphlets and papers. Here all the unbound material is classified and arranged as well as our poor facilities in the way of shelving will permit. This basement is unplastered, and the constant treading of many feet in the library above causes a sifting down of dry mortar, so that it is impossible to keep pamphlets fit for binding except by wrapping and tying them up. It is hoped that either this room can be plastered and fitted up with closed cupboards or else a more suitable room furnished. It has been found during the two summers which this basement room has been used that the walls gather dampness, and that papers and books must have special attention to prevent them from becoming mildewed. On this account it is desirable that some other room be provided.

And in this connection attention is called to the need of a work-room. Nothing of this kind has been provided—one of the most important rooms of a large library. At present the work of arranging and making up volumes for binding, as well as the unpacking and care of new books, is carried on in the basement, which does not fur-



LIBRARY AND AGRICULTURAL SCIENCE HALL.

nish sufficient light on even the brightest days. The books are then brought up into the small office room for the necessary labeling and cataloguing. This office is already crowded with its librarian's desk, typewriter desk, and a table for sorting mail, and a room furnished with large work tables is a pressing need.

The attention of the Board is also called to the fact that no entrance direct to any part of the library has been provided where boxes and heavy freight may be taken care of.

To show the growth of the library for the past two years, I give a summary of the inventory June 30 each year:

	1894.	1895.	1896.
Books and pamphlets.....	\$24,978 41	\$26,602 95	\$28,291 78
Furniture.....	700 10	3,539 85	3,963 85
Catalogue.....	1,977 00	1,982 00	2,604 50
Office furnishings.....			151 98
Binders, cases, etc.....	168 80	171 50	101 24
Bills receivable.....	2 60	2 00	1 00
Cash.....	2 46	2 46	2 56
Totals.....	\$27,829 37	\$32,300 76	\$35,119 91

For the fiscal year ending June 30, 1895, no appropriation had been made for the purchase of books, and the increase was due wholly to donations and a very few books purchased from the income fund of the College. The subscription list of magazines was paid for from the same fund.

The growing knowledge of the sciences demands the latest editions of scientific works, and a library to meet the wants of students engaged in scientific studies must have added to its shelves the late publications on such subjects. It has been estimated by C. W. Andrews, librarian of the Massachusetts Institute of Technology, that scientific works cost more by one-half than the same number of works of a miscellaneous character; that \$500 will not buy any more such books than \$100 would buy of books in general literature. With this in mind, and the fact that for several years we had no appropriation at all, and for the past year only \$1,000 was granted, it is thought that we ought to have at least \$10,000 each year, and the sum of \$300 is asked for the subscription list of magazines. What is said above as to the relative cost of scientific books and others applies also to periodicals.

Our catalogue case is now full, and another will have to be provided by another year. A case such as we need, fitted up with the necessary cards, is listed by the library bureau at \$250.

The shelving provided when we moved into the new building is now all in use, and new stacks are needed to provide for the growth of the library. For a while, at least, we will need only to complete with a gallery floor the stacks already there. This, it has been esti-

mated, will require \$4,300. The east room should have a set of cupboards for reference books.

The financial report of the library for the past two years is here given :

EXPENDITURES.	1894-'95.	1895-'96.
Cash, state appropriation for books.....		\$909 38
Cash, state appropriation for furniture.....		500 00
Current funds: Books.....	\$79 52	34 11
Student assistance.....	347 87	337 17
Freight.....	11 23	18 39
Supplies.....	18 58	29 03
Furniture.....		23 35
Periodicals.....	248 45	249 85
Salary as assistant (July and August).....	100 00	
Totals.....	\$805 65	\$2,191 28
Department bills:		
Printing.....	\$25 25	\$8 35
Mechanical, repairs.....	8 52	3 85
Executive, postage.....	6 48	6 07
Stacks from State Board of Public Works.....	3,200 00	
Totals.....	\$3,240 25	\$18 87
Total expenses.....	\$4,045 90	\$2,210 15
CREDITS.		
Cash.....	\$2 46	\$2 56
Department transfer.....	218 00	
Bills receivable.....		1 00
Inventory increase.....	4,468 23	2,815 06
Total credits.....	\$4,688 69	\$2,818 62
Balances, actual proceeds.....	\$642 79	\$608 47

Respectfully submitted.

JULIA R. PEARCE,

Librarian.

COLLEGE, June 30, 1896.

SCHEDULE A.—DONATIONS TO THE LIBRARY, 1894-'96.

- American Book Company: Appgar's Trees of Northern United States; Winslow's The Principles of Agriculture.
- American Branch North Holland Association: Herd-book, vols. 1, 2, 3.
- American Entomological Society: Transactions, vols. 19, 20, 21.
- American Hereford Association: Herd-book, vol. 14.
- American Museum of Natural History: Reports, 1889-'93; Bulletins, vol. 5, 1893.
- American Shropshire Sheep Society: Record, vols 4, 7, 8, 9, 10.
- American Swedenborg Printing and Publishing Society: Apocalypse Explained, vols. 1, 2, 3, 4; Apocalypse Revealed, vols. 1 and 2; Conjugal Love; The True Christian Religion; The Four Doctrines; Divine Love and Wisdom; Divine Providence; Miscellaneous Theological Works: Heaven and Hell.
- Association of Agricultural Colleges and Experiment Stations: Reports, 1891-'95.
- Edward Atkinson: The Science of Nutrition.
- American Library Association: Library Catalogue Chicago Model Library.
- John H. Aughey: Tupelo.
- W. E. Castle: The Young Man Four-Square, Vance.
- Chicago Library Association: Memorial of Chicago Library.
- Cincinnati Society of Natural History: Journal, vols. 15 and 16.
- Columbia College: Reports and Catalogue, 1893-'94.
- Connecticut State Board of Health: Reports, 1894-'95.
- Experiment Stations: Reports and Bulletins as issued.
- Essex Swine Record Improved: Vols. 1 and 2.

- Pres. Geo. T. Fairchild: National Educational Association, Proceedings, 1894; National Educational Association, 1893. Committee on Secondary Schools, Report; National Council of Congregational Churches, 1892; Kansas Superintendent of Public Instruction; Kansas Treasurer of State, Report, 1891-'92; Chicago Board of Trade, 1885; Kansas Railroad Commissioners' Report, 1890; Michigan State Board of Health Report.
- Florida State Horticultural Society: Report, 1892.
- Georgia Department of Agriculture: 1894, vol. 20.
- Prof. C. C. Georgeson: New York at the World's Columbian Exposition.
- Sec. I. D. Graham: Gay's Business Bookkeeping; Doyle, A Case of Identity.
- C. P. Hachenburg: Medical Consultation Book.
- Miss Josephine Harper: Ralston Meals; A Manual of Object Teaching.
- Harper & Brothers: Browne's Principles of Ethics.
- Hartford Steam Boiler Inspection and Insurance Company: The Locomotive, vol. 16.
- Harvard College: Annual Reports, 1892, 1893, 1893-'94, 1894-'95.
- Mrs. G. W. Higinbotham: Memoirs of Alexander Campbell, vols. 1 and 2; Life of Rev. Morris Officer.
- Holstein-Friesian Association: Herd-book, vols. 9, 10, 11, 12.
- Maj. J. K. Hudson: Foster vs. Hudson, History, Facts and Conclusions in Case of, 1890-'95.
- Humanitarian League: Salt's Animals' Rights.
- Illinois Labor Commissioner: Report of Labor Bureau, 1894.
- Indiana Academy of Science: Report, 1892.
- Iowa State Dairy Commissioner: Reports, 1894-'95.
- Kansas State Board of Agriculture, F. D. Coburn: Report, vol. 14, 1893.
- Kansas Book Company: The Farrian System of Penmanship.
- Kansas Bureau of Labor and Industry: Report, 1893.
- Kansas Horticultural Society, vols. 18 and 19.
- Kansas, Laws of, 1895.
- Kansas Railroad Commissioners: Report, 1894.
- Kansas Secretary of State: Kansas Public Documents, vols. 1 and 2, 1893-'94.
- Prof. D. E. Lantz: Kilpatrick and Our Cavalry, Moore; A History of the Italian Republics, C. L. DeSismondi.
- Library Bureau: Catalogue, 1894.
- McIntosh, D.: Diseases of Horses and Cattle.
- Maine Forest Commissioner: Report, 1894.
- Maine State Officers: Registration Report, 1893.
- F. A. Marlatt: American Bee Journal, numbers for two years, 1894-'96.
- Massachusetts Cattle Commissioner: Report, 1890.
- Massachusetts Horticultural Society: Report, 1893.
- Massachusetts Society for the Promotion of Agriculture: Infectiousness of Milk.
- Michigan State Board of Health: Report, 1891.
- Minnesota State Dairy and Food Commissioner: Report, 1893-'94.
- Missouri Botanical Garden: Reports, 1895, 1896.
- Missouri Geologist: Missouri Geological Survey, vols. 1, 2, 3, 4, 5, 6, and 7.
- Nevada Surveyor General: Reports, 1889, 1892.
- New Hampshire Secretary of Agriculture: Report, vol. 23.
- New Hampshire Agricultural College: Report, 1895.
- Newport Natural History Society: Report.
- New York Department of Agriculture: Report.
- New York Farmers: Report, 1892-'94.
- New York State Entomologist: Report.
- New York Tribune: Tribune Almanac, 1893.
- Ohio Dairy and Food Commissioner: Report, 1895.
- Ontario Department of Agriculture: Report, vol. 1, 1893.
- Ontario Farmers' Institutes, Secretary of: Report, 1894.
- Oregon State Board of Horticulture: Reports as issued.
- Pennsylvania Soldiers' Orphans' School: Reports as issued.
- Pennsylvania State College: Reports as issued.
- E. A. Popenoe: Missouri Horticultural Society, Reports, 1891 and 1894; Transactions American Association of Nurserymen, Florists, and Seedsmen.
- E. B. Purcell: Industries of Kansas City, 1888; Industries of St. Louis, 1885; Atchison, Topeka & Santa Fe Railway Co., Report, 1887-'88; Resources of Missouri, 1877; Treaties and Conventions between United States and Other Powers; Poor's Manual of Railroads; Industrialist, April 22, 1876-October 6, 1877; Industrialist, October 13, 1877-April 12, 1879; Educational Calendar, 1877; Kansas State Gazette and Business Directory, vol. 5, 1886-'87; Kansas Insurance

- Report, 1881, 1882; The World Almanac, 1893; The Industrialist, vol. 19; New Jersey State Board of Assessors, 1884, 1885, 1886, 1888, 1890; Pennsylvania Life Insurance Report, 1880, part 2; Philadelphia Southern Steamship, Manufacturers', and Mercantile Register; Bankers' Directory and Collectors' Guide; Rhodes' Bank List, 1885; Indian Commissioners, 1781; Kansas Treasurer of State, 1883-'84, 1878, 1879-'80, 1885-'86; Bankers' Directory and Attorneys' List; Merchants' Banking and Legal Directory of United States, 1873; Kansas Insurance Report, 1883, 1884, 1885; Kansas Secretary of State, 1878, 1889-'90, 1881-'82; Manual of Rules for the Legislature of Pennsylvania; Kansas Directory and Gazetteer, 1870; The Sun Almanac, 1891, 1893, 1894; Tribune Almanac, 1883, 1894; Memorial Addresses on William M. Love, Alabama; Fernando Wood, New York; Evarts W. Farr, New Hampshire; Godlove S. Orth, Indiana; J. T. Updegraff, Ohio; Dudley C. Haskell, Kansas; Merchants' and Bankers' Almanac, 1872; Bankers' Almanac and Register and Legal Directory, 1874, 1875, 1877, 1880, 1887.
- A. E. Ridenour and Max Spaulding: Paine's Age of Reason.
- Rochester Academy of Science: Report.
- Rothamsted Investigations: Six Lectures by Warington; Six Lectures by Gilbert.
- Russian Section at the World's Fair: Catalogue, 1893.
- Smithsonian Institution, Report, 1893: Bureau of Ethnology—List of Prehistorical Works East of Rocky Mountains, Cyrus Thomas; Omaha and Ponka Letters, J. O. Dorsey; Moqui Pueblo Indians of Arizona; Eleventh Census of the United States, Extra Bulletin; Six Nations of New York.
- E. Stanley: Kansas School Laws, 1895.
- Chas. A. Strelinger & Co.: A Book of Tools.
- Unknown: True Manhood, Shepherd.
- United States Government: Arbor Day: Its History and Observance, N. H. Egleston; United States Statutes, 52d Congress, 1st Session, 1891-'92; United States Statutes, 53d Congress, 3d Session, 1894-'95; United States Statutes at large, 53d Congress, 1893-'94, vol. 28; Public Documents as issued; Official Gazette of the Patent Office as issued; Consular Reports as issued; Congressional Records, vol. 27, pts. 1-4, and Index; Forms of Procedure, C. H. Lauchheimer, Silver in the 51st Congress; Coast Survey, Catalogue of Charts, 1892.
- Commissioner of Education: History of Education in Maryland, Connecticut, Delaware, Rhode Island, Iowa; Report, 1884-'85, 1890-'91, vols. 1, 2.
- Bureau of Animal Industry: Report, 1893-'94.
- Entomological Commission: Rocky Mountain Locust, Bulletins 1-6.
- Department of Agriculture: Chemistry and Economy of Foods, 1895, with Forestry; Division of Chemistry, Bulletins 28, 31, 35; 7th, 8th and 9th Annual Conventions of Agricultural Colleges and Experiment Stations; Division of Statistics, Reports; Report of Microscopist, 1889-'92; Year-book, 1894, 1895.
- Labor Commissioner: Report, 1894, The Slums; Report, 1892, Industrial Education.
- National Museum, 1893, vol. 16: Bulletin 39, Directions for Collecting Specimens in Natural History; Bulletin 40, Writings of G. M. Lawrence; Bulletin 43, Bats of North America; Bulletin 44, Noctuidæ of America; Bulletin 46, Myriapoda of North America.
- National Herbarium, vol. 24.
- War Department: U. S. Army Regulations, 1895; Official Army Register, 1895; Chief of Engineers U. S. Army, 1894, pts. 1, 2, 3, 4, 5, 6; Inspector-General, 1893-'94; Ordnance Reports, 1893-'94; American Ephemeris and Nautical Almanac, 1896, 1897; Rainfall on the Pacific Slope.
- Virginia State Board of Agriculture: Reports as issued.
- Prof. T. E. Will: Protection or Free Trade; Practical Work in Geography, McCormick; Malthus and his work, James Bonar.
- Prof. J. D. Walters: Atlas van Nederland, Von Bemmelen; Die Landwirtschaft der Vereinigten; Staaten von Amerika, Hans Moos; The Interoceanic Canal of Nicaragua.
- Wisconsin Dairy Commissioner: Report, 1893-4.
- Wisconsin Farmers' Institutes, Secretary: Report, 1895.
- Young Men's Christian Association and Young Women's Christian Association of the K. S. A. C.: Women of the Orient, Houghton; My Missionary Apprenticeship, Thoburn; Medical Missions, Lowe; Our Country, Strong; India and Malaysia, Thoburn; The Holy Spirit in Missions, Gordon; Life and Letters of Joseph Hardy Neesima, Hardy; Faith Working by Love, Fiske; The Acts of the Apostles, Pierson; John G. Paton, Missionary to the New Hebrides, parts 1, 2; The Student Missionary Enterprise, Moorhead.

SCHEDULE B.

The periodicals in the following list have been on file in the library :

PURCHASED.

Agricultural Gazette, London.	Good Housekeeping.
Agricultural Science.	Harper's Bazaar.
American Architect, international edition.	Harper's Magazine.
American Chemical Journal.	Harper's Weekly.
American Historical Review.	Inland Architect, photo edition.
American Journal of Science.	Inland Printer.
American Journal of Sociology.	International Journal of Ethics.
American Mathematical Monthly.	Journal of Botany.
American Naturalist.	Journal of Comparative Medicine.
American Veterinary Review.	Journal of Political Economy.
Analyst, London.	Journal of the American Chemical Society.
Arena.	Journal of the Chemical Society, London.
Atlantic Monthly.	Journal of the Military Service Institute.
Auk.	Journal of the Royal Agricultural Society.
Botanical Gazette.	Journal of the Society of Chemical Industry.
British Printer.	Kansas City Star, daily.
Bulletin Torrey Botanical Club.	Library Journal and Literary News.
Butterick's Delineator.	Literary World, Boston.
Canadian Entomologist.	Modern Medicine and Bacteriological Review.
Carpentry and Building.	Nineteenth Century, New York.
Cassier's Magazine.	North American Review.
Century Magazine.	Nation.
Chautauquan.	Nature.
Chemical News, London.	Paper and Press.
Cosmopolitan.	Philosophical Magazine.
Country Gentleman.	Political Science Quarterly.
Critic.	Popular Science Monthly.
Eclectic Magazine.	Psyche.
Edinburgh Review.	Publishers' Weekly.
Education.	Quarterly Journal of Economics.
Electrical Review.	Review of Reviews.
Engineering Record.	Science.
Entomological News.	Scientific American and Supplement.
Erythea.	Scribner's Magazine.
Forum.	Season, New York.
Garden, London.	Table Talk.
Garden and Forest.	Veterinary Magazine.
Gardening, Chicago.	Zoologist.
Gardener's Chronicle.	

DONATIONS AND EXCHANGES.

Acker und Gartenbau' Zeitung, Milwaukee, Wis.	Farm and Poultry Journal, Boston.
Agriculturist of New South Wales.	Farmer and Breeder, Springfield, Ill.
American Creamery, New York.	Farmers' Vindicator, Valley Falls, Kas.
American Fertilizer, Philadelphia, Pa.	Gazette of the United States Patent Office.
American Grange Bulletin, Cincinnati, Ohio.	Holstein-Friesian Register, Brattleboro, Vt.
American Swine Breeder, Cedar Rapids, Iowa.	Hospodar, Omaha.
American Swine Herd, Chicago.	Indiana Farmer, Indianapolis, Ind.
American Wheelman, Chicago.	Industrialist, Manhattan.
Bee Journal, Chicago.	Industrial American, Lexington, Ky.
Book Reviews.	Jersey Bulletin.
Breeder's Gazette, Chicago.	Journal of Elisha Mitchell Society of Natural History.
California Cultivator, Los Angeles.	Kansas Agriculturist, Wamego.
Call, San Francisco.	Kansas City Live Stock Indicator.
Congregationalist, Boston.	Kansas Endeavor, Topeka.
Daily Capital, Topeka.	Kansas Farmer, Topeka.
Dairy World, Chicago.	Kansas Quarterly Review.
Elgin Dairy Report, Elgin, Ill.	Ladies' Home Companion.
Farm and Fireside, Chicago.	Literary News, New York.

DONATIONS AND EXCHANGES.—*Concluded.*

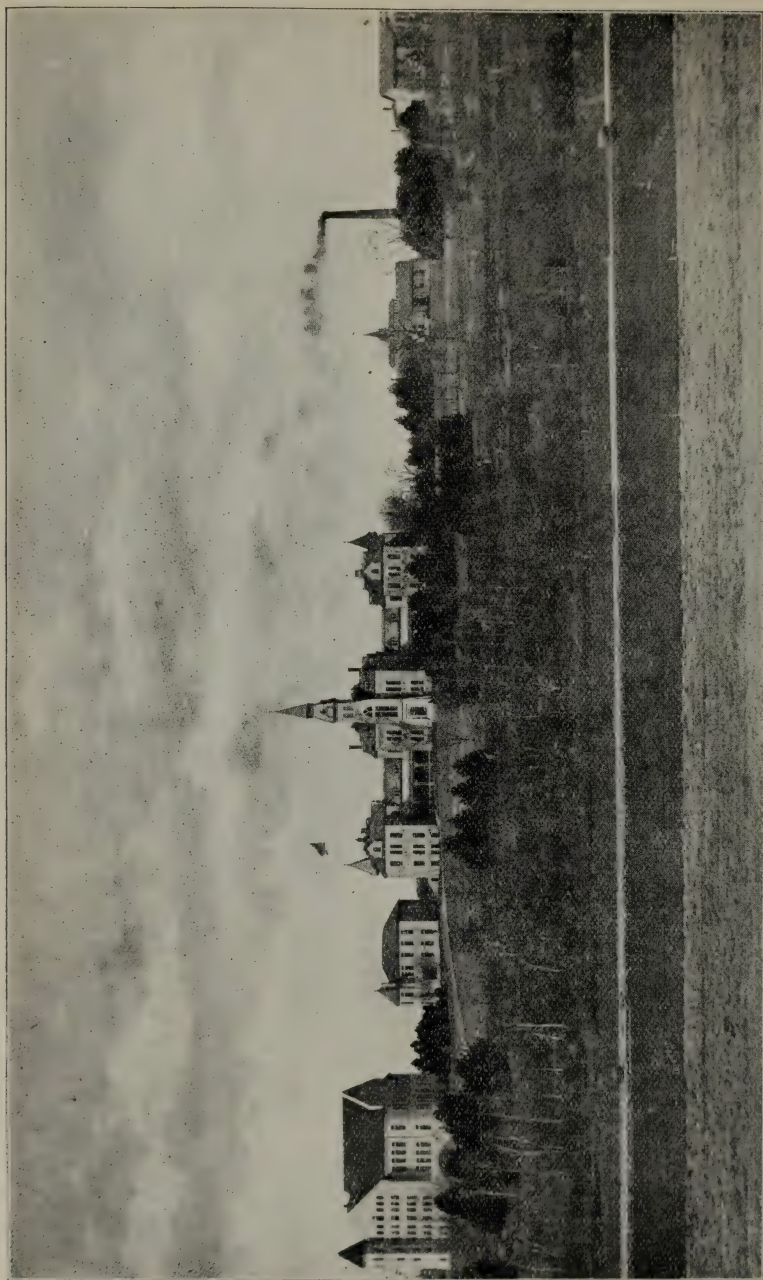
Live-Stock Indicator, Kansas City, Mo.
 Live-Stock Report, Chicago.
 M. A. C. Record, Lansing, Mich.
 McPherson Democrat.
 Mid-Continent, St. Louis.
 Midland Poultry Journal, Kansas City, Mo.
 Missouri Valley Farmer, Atchison, Kas.
 Modern Mexico, Topeka.
 New England Florist, Boston.
 Oberlin Review, Oberlin, Ohio.
 Orange Judd Farmer, Chicago.
 Our Dumb Animals, Boston.
 Our Grange Homes, Boston.
 Outlook, The.
 Practical Farmer.
 Presbyterian, Philadelphia.

Proceedings American Philosophical Society
 Philadelphia.
 Public Ledger (daily), Philadelphia.
 Santa Rosa (Cal.) Republican.
 School Journal, New York.
 Southern Farmer, New Orleans.
 Southern States.
 Spirit of the West, Des Moines.
 Traveler's Record, Hartford.
 Veterinary Review, New York.
 Western Agriculturist, Quincy, Ill.
 Western Rural, Chicago.
 Western School Journal, Topeka.
 Western Swineherd.
 Will Carleton's Magazine.

FROM INDUSTRIALIST OFFICE.

Agricultural Epitomist, Indianapolis, Ind.
 American Agriculturist, New York.
 Baltimore Sun.
 Colman's Rural World, St. Louis.
 Events, Des Moines, Iowa.
 Farm and Home, Springfield, Ohio.
 Farm, Field and Fireside, Chicago.
 Farmers' Home Weekly, Dayton, Ohio.
 Farmers' Review, Chicago.
 Farming, Toronto, Canada.
 Grange Visitor, Charlotte.
 Hoard's Dairyman, Atkinson, Wis.
 Homestead, Des Moines, Iowa.
 Irrigation Farmer, Ottawa, Kas.
 Journal of the Cincinnati Society of Natural
 History.
 Kansas City Live-Stock Indicator.
 Kansas City Weekly Journal.
 Kansas Farmer, Topeka.
 Kansas Star, Olathe.
 Kansas University Weekly.
 Ladies' Home Companion.
 Live-Stock Report, Chicago.

Maryland Farmer, Baltimore.
 Mirror and Farmer, Manchester, N. H.
 New England Farmer.
 Orange Judd Farmer.
 Orphans' Friend.
 Pacific Coast Dairyman, Tacoma, Wash.
 Poultry Breeder, Topeka.
 Practical Farmer, Philadelphia.
 Prairie Farmer, Chicago.
 Riley County Educator, Manhattan.
 Rural Canadian, Toronto, Canada.
 Rural Northwestern, Portland, Ore.
 School and Home, Salina, Kas.
 Southern Cultivator and Dixie Farmer.
 Southern Workman.
 Standard (daily), Leavenworth, Kas.
 State Normal Monthly.
 Vick's Magazine, Rochester, N. Y.
 Western Odd Fellow, Topeka.
 Wallace's Farmer, Des Moines, Iowa.
 Western Agriculturist, Quincy, Ill.
 Youth's Companion, Boston.



KANSAS STATE AGRICULTURAL COLLEGE. (General View.)

ELEVENTH BIENNIAL REPORT

OF THE

BOARD OF REGENTS AND FACULTY

OF THE

Kansas State Agricultural College,

LOCATED AT

MANHATTAN.

1897-'98.

TOPEKA:
J. S. PARKS, STATE PRINTER.
1898.

Board of Regents.

HON. J. N. LIMBOCKER (1901)*, *President*,
Manhattan, Riley county.

HON. MRS. SUSAN J. ST. JOHN (1901), *Vice-President*,
Olathe, Johnson county.

HON. C. B. HOFFMAN (1901), *Treasurer*,
Enterprise, Dickinson county.

HON. T. J. HUDSON (1899), *Loan Commissioner*,
Fredonia, Wilson county.

HON. GEORGE M. MUNGER (1901),
Eureka, Greenwood county.

HON. WILLIAM H. PHIPPS (1899),
Belleville, Republic county.

PRES. THOS. E. WILL (*ex officio*), *Secretary*.

*Term expires.

KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KAN., November 15, 1898.

To his Excellency John W. Leedy, Governor:

DEAR SIR—I transmit herewith, under the laws of the state, the Eleventh Biennial Report of the Board of Regents of the Kansas State Agricultural College, including the reports of the president, professors, and other officers, for the two years ending June 30, 1898.

Respectfully yours, THOS. E. WILL,
Secretary Board of Regents.

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REPORT OF THE BOARD OF REGENTS.

To his Excellency J. W. Leedy, Governor of Kansas:

The Board of Regents of the Kansas State Agricultural College present, as required by law, their eleventh biennial report, covering the two years ending June 30, 1898.

The most important event in the history of the biennium is the reorganization of the institution. Our reasons for this, being fully set forth elsewhere (see *Industrialist*, July 15, 1897, page 1), need receive but brief mention here. Of the need for this reorganization, many have long been convinced. The organic act to which the College owes its existence as a state institution obviously contemplates the emphasizing in such an institution of work in agriculture and the mechanic arts. The agricultural work, however, we found weak and inefficient, while both agricultural and mechanical departments were hampered by an inadequate course of study. The work of the Experiment Station, furthermore, impressed agriculturists in the state as slight in amount, largely impractical, and not always trustworthy. A considerable portion of the teaching force, moreover, were regarded as lacking in preparation, strength, vigor, and enthusiasm. Eight members of the faculty were notified at the April and June meetings that their services would be terminated at the close of the current academic year. Two others resigned voluntarily, presumably because of the reorganization, and two for other reasons.

One new department, that of oratory, was created at the beginning of the last college year and given work formerly existing but scattered among various professors and assistants; and two existing departments, those of horticulture and entomology, were consolidated, partly because of the similarity of their lines of work, partly because of the comparatively light duties hitherto falling to those departments. The work in zoölogy was transferred from the department of entomology to that of veterinary science; the associate professor of chemistry was made a full professor and denominated professor of applied chemistry, while to the other professor of chemistry was given the title of professor of pure chemistry. The work in geology has been assigned to the latter. The following tables give the names of the boards of instruction for 1896-'97 and for 1897-'98, with the salaries paid in each of the two years and the annual rates of salaries.

SALARY TABLE, 1896-'97.

BOARD OF INSTRUCTION, 1896-'97.	From station fund.	From annual fund.	From income fund.	Total paid.	Annual rate.
George T. Fairchild, LL. D., ¹ president, professor of logic and philosophy	\$300 00		\$2,700 00	\$3,000 00	\$3,000 00
George H. Failyer, M. Sc., professor of chemistry and mineralogy	633 34	\$1,366 66		2,000 00	2,000 00
Edwin A. Popenoe, A. M., professor of entomology and zoology	633 34	1,366 66		2,000 00	2,000 00
David E. Lantz, M. Sc., professor of mathematics		1,600 00		1,600 00	1,600 00
John D. Walters, M. Sc., professor of in- dustrial art and designing		1,600 00		1,600 00	1,600 00
Ira D. Graham, A. M., secretary, in- structor in bookkeeping	400 00		1,100 00	1,500 00	1,500 00
Oscar E. Olin, professor of English lan- guage and literature		1,600 00		1,600 00	1,600 00
Mrs. Nellie S. Kedzie, M. Sc., professor of household economy and hygiene			1,533 33	1,533 33	1,600 00
Mrs. Elida E. Winchip, superintendent of sewing			1,000 00	1,000 00	1,000 00
Ozni P. Hood, B. Sc., professor of me- chanics and engineering, superintend- ent of workshops		1,600 00		1,600 00	1,600 00
Alexander B. Brown, A. M., professor of music			1,200 00	1,200 00	1,200 00
John S. C. Thompson, superintendent of printing			1,116 66	1,116 66	1,100 00
Francis H. White, A. M., professor of history and political science			1,600 00	1,600 00	1,600 00
Charles C. Georgeson, M. Sc., ¹ professor of agriculture, superintendent of farm, Ernest R. Nichols, A. M., professor of physics	1,200 00	800 00		2,000 00	2,000 00
Nelson S. Mayo, D. V. S., M. Sc., profes- sor of physiology and veterinary science, Julius T. Willard, M. Sc., assistant pro- fessor of chemistry	780 00	820 00		1,600 00	1,600 00
Albert S. Hitchcock, M. Sc., professor of botany	700 00	700 00		1,400 00	1,400 00
Silas C. Mason, M. Sc., professor of hor- ticulture, superintendent of orchards and gardens	780 00	1,020 00		1,800 00	1,800 00
Miss Josephine C. Harper, instructor in mathematics	546 66	1,036 68		1,583 34	1,600 00
Miss Alice Rupp, instructor in English ..		1,000 00		1,000 00	1,000 00
Harry G. Cavanaugh, captain 13th United States infantry, ³ professor of military science and tactics		1,000 00		1,000 00	1,000 00
Thomas E. Will, A. M., professor of polit- ical economy		1,600 00		1,600 00	1,600 00
Miss Julia R. Pearce, librarian			683 33	683 33	700 00
ASSISTANTS AND FOREMEN.					
C. M. Breese, M. Sc., assistant in chem- istry		1,000 00		1,000 00	1,000 00
Grace M. Clark, B. Sc., stenographer in executive office			420 00	420 00	420 00
Lorena E. Clemons, B. Sc., clerk in execu- tive offices			300 00	300 00	300 00
Bertha Winchip, B. Sc., assistant in sew- ing (nine months)			270 00	270 00	270 00
William Baxter, foreman of greenhouse, W. L. House, foreman of carpenter shop, Enos Harrold, foreman of iron shop		800 00		800 00	800 00
Geo. Sexton, foreman of farm		800 00		800 00	800 00
C. A. Gundaker, engineer		500 00		500 00	500 00
A. C. McCreary, ² janitor			720 00	720 00	720 00
E. Emrick, janitor			466 69	466 69	
Jacob Lund, M. Sc., fireman and steam fitter			150 00	150 00	600 00
			600 00	600 00	600 00

¹ With house.² Deceased, January 29, 1897.³ On detail from United States war department.

SALARY TABLE, 1896-'97—CONCLUDED.

ASSISTANTS IN EXPERIMENT STATION, 1896-'97.	From station fund.	From annual fund.	From income fund.	Total paid.	Annual rate.
F. A. Marlatt, B. Sc., entomology	\$800 00	.....	.....	\$800 00	\$800 00
F. C. Burtis, M. Sc., agriculture	800 00	.....	.....	800 00	800 00
D. H. Otis, B. Sc., agriculture	600 00	.....	.....	600 00	600 00
F. C. Sears, B. Sc., horticulture (six months)	386 68	.....	.....	386 68	.....
I. Jones, B. Sc., horticulture (six months),	240 00	.....	.....	240 00	480 00
J. B. S. Norton, botany	80 00	.....	.....	80 00	.....
G. L. Clothier, B. Sc., botany	400 00	.....	.....	400 00	480 00
I. Jones, B. Sc., irrigation (four months),	180 00	.....	.....	180 00	.....
Totals	\$9,460 02	\$20,210 00	\$16,260 01	\$45,930 03	\$45,670 00

SALARY TABLE, 1897-'98.

BOARD OF INSTRUCTION, 1897-'98.	From station fund.	From annual fund.	From income fund.	Total paid.	Annual rate.
Thomas Elmer Will, ¹ A. M., president, professor of economics and philosophy..	\$260 00	.....	\$2,340 00	\$2,600 00	\$2,600 00
Ira D. Graham, A. M., secretary, profes- sor of bookkeeping, commercial law, and accounts	373 00	.....	1,027 00	1,400 00	1,400 00
Henry M. Cottrell, M. S., professor of agriculture, superintendent of farm....	1,080 00	\$720 00	.....	1,800 00	1,800 00
Albert S. Hitchcock, M. S., professor of botany	865 00	935 00	.....	1,800 00	1,800 00
Julius T. Willard, M. S., professor of ap- plied chemistry	725 00	725 00	.....	1,450 00	1,450 00
George F. Weida, Ph. D., professor of pure chemistry .....	.....	1,450 00	.....	1,450 00	1,450 00
Edward W. Bemis, Ph. D., professor of economic science .....	.....	1,800 00	.....	1,800 00	1,800 00
Oscar Eugene Olin, A. M., professor of English language and literature .....	.....	1,450 00	.....	1,450 00	1,450 00
Frank Parsons, B. C. E., professor of history and political science (for two terms) .....	.....	.....	1,000 00	1,000 00	1,000 00
E. E. Faville, M. S. A., professor of hor- ticulture and entomology, superintend- ent of orchards and gardens	621 00	829 00	.....	1,450 00	1,450 00
Mrs. Helen Campbell, professor of house- hold economics, supt. of domestic science depts. (until April 1, 1898) .....	.....	.....	1,015 00	1,015 00	1,450 00
John D. Walters, M. S., professor of in- dustrial art and designing .....	.....	1,450 00	.....	1,450 00	1,450 00
Miss Mary F. Winston, Ph. D., professor of mathematics .....	.....	1,450 00	.....	1,450 00	1,450 00
Ozni P. Hood, M. S., professor of me- chanics and engineering, superintend- ent of workshops .....	.....	1,650 00	.....	1,650 00	1,650 00
Ralph Harrison, ² first lieutenant 2d U. S. cavalry, professor of military science and tactics .....	.....	.....	.....	.....	.....
Alexander B. Brown, A. M., professor of music .....	.....	.....	1,200 00	1,200 00	1,200 00
Fredric Augustus Metcalf, O. M., profes- sor of oratory .....	.....	1,450 00	.....	1,450 00	1,450 00
Ernest R. Nichols, D. B., B. S., A. M., professor of physics .....	.....	1,450 00	.....	1,450 00	1,450 00
Paul Fischer, B. Agr., M. V. D., professor of veterinary science	660 00	990 00	.....	1,650 00	1,650 00
Charles S. Davis, ³ superintendent of printing .....	.....	.....	900 00	900 00	900 00
Miss Louise Hochleitner, superintend- ent of sewing (one month) .....	.....	.....	80 00	80 00	.....
Miss Harriet Howell, superintendent of sewing (for over eight months) .....	.....	.....	666 67	666 67	800 00
Miss Alice Rupp, instructor in English...	.....	800 00	.....	800 00	800 00

¹ With house.² On detail from United States war department.³ Paid in twelfths.

SALARY TABLE, 1897-'98 — CONCLUDED.

BOARD OF INSTRUCTION, 1897-'98.	From station fund.	From annual fund.	From income fund.	Total paid.	Annual rate.
Miss Josephine C. Harper, instructor in mathematics		\$800 00		\$800 00	\$800 00
Miss Julia R. Pearce, librarian (seven months)			\$504 00	504 00	
Miss Helen J. Wescott, librarian (three months)			166 00	166 00	720 00
ASSISTANTS AND FOREMEN.					
William L. House, foreman of carpenter shop		720 00		720 00	720 00
William Canfield Lee, ³ A. B., private secretary to president			800 00	800 00	800 00
Lorena E. Clemons, B. S., clerk in secretary's office			380 00	380 00	480 00
George Sexton, ¹ foreman of farm (three months)		150 00		150 00	
William Baxter, foreman of greenhouse ..			720 00	720 00	720 00
Charlotte J. Short, M. S., assistant in household economics (nine months) ..			270 00	270 00	270 00
Jacob Lund, M. S., engineer			600 00	600 00	720 00
Enos Harrold, foreman of iron shop		800 00		800 00	800 00
Robt. Huddleson, engineer (four mos.) ..				240 00	
Margaret J. Minis, assistant librarian (three months)			240 00	90 00	360 00
George Sexton, assistant in mechanical department (two and one-half mos.) ..		125 00	90 00	125 00	
Thomas E. Layden, B. S., assistant in mechanical department (six months) ..		360 00		360 00	720 00
Eugene Emrick, ³ janitor			600 00	600 00	600 00
Helen H. High, assistant in sewing (nine months)			270 00	270 00	270 00
ASSISTANTS IN EXPERIMENT STATION.					
F. C. Burtis, M. S., field and feeding experiments	\$720 00			720 00	720 00
D. H. Otis, B. S., dairy	660 00			660 00	660 00
George L. Clothier, B. S., botany	660 00			660 00	660 00
Percival J. Parrott, A. B., entomology ..	720 00			720 00	720 00
Wm. L. Hall, ³ horticulture	420 00			420 00	420 00
Totals	\$7,764 00	\$20,104 00	\$12,868 67	\$40,736 67	\$41,610 00

¹ With house.³ Paid in twelfths.

Course of Study.—In the opinion of your Board and the present faculty, the former course of study failed in many respects to meet the requirements of a land-grant college. In a word, it was too general in character and too weak in the special lines which such a college should emphasize; its model apparently being the course of a high school with industrial leanings rather than that of a college of agriculture and the mechanic arts, or an institute of technology. As explained elsewhere (see President Will's report), the course has been split into several courses and thoroughly revised, with a view to meeting the wants of the several classes of students which it is conceived such an institution should serve.

The College Herd.—The College herd of blooded cattle, believed for some years to be tuberculous, and proved in January, 1897, by the tuberculin test to be so, was again tested with tuberculin in October, 1897. Fourteen animals reacted on both occasions. Acting on the advice of Drs. James Law, T. A. Geddes, and Paul Fischer, these animals

were slaughtered, and proved by the slaughter test to be tuberculous, the disease in some cases having reached an advanced stage. A full report on the cases is published in the *Industrialist* for October 25, 1897. The carcasses of the slaughtered animals were burned. Their value, as given on the College inventory for 1895-'96, was \$2220.

The members of the herd that had twice passed the test were pronounced by the veterinarians in attendance to be sound. It being desired to dispose of the blooded cattle, and purchase instead grade cattle for use in the dairy herd, these cattle were advertised for sale (see names and pedigrees in *Industrialist* for November 8, 1897), and were sold at public auction at the College on November 18. The prices received for the several animals are published in the *Industrialist* for November 22, 1897. Following is a summary of receipts:

8 Shorthorn bulls sold for.....	\$612 00	Average....	\$76 50
10 Shorthorn females sold for.....	706 00	"	70 60
1 Hereford bull sold for	50 00		
3 Hereford females sold for	429 00	"	143 00
2 Jersey bulls sold for	137 00	"	68 50
5 Jersey females sold for.....	338 00	"	67 60
4 Holstein-Friesian bulls sold for.....	113 00	"	28 25
4 Holstein-Friesian females sold for	235 00	"	58 75
<hr/>			
Total 37 head sold for.	\$2,620 00		
12 pure-bred, unregistered Shropshire sheep, \$72.50.			

The Experiment Station.—In the year 1896-'97 experimental work continued on the lines formerly pursued. At the beginning of 1897-'98 marked changes were begun in the work of several departments. Following are some of the principal lines of work now in progress:

The farm department has studied the production of drought-resisting plants—Kafir-corn, alfalfa and soy-beans—paying special attention to the inoculation of the soy-bean with root-tubercle-forming bacteria which gather nitrogen, the most-needed element for increasing the fertility of the land, from the air and leaving it in condition for plant food. In connection with the botanical and chemical departments, it has carried on experiments in seed breeding for the purpose of increasing the yield, vigor and protein contents of wheat, oats, and corn. In connection with the chemical department, it is developing practical methods of conservation of soil moisture. Sixteen experiments were conducted to test the value of Kafir-corn for pork production, and the best methods of feeding it. A dairy herd of thirty common cows has been handled to develop best methods of feeding drought-resisting crops for milk production and for developing milch cows.

Experimental work in the department of horticulture and entomology has included :

1. Crossing of fruits.
2. A study of the sand plum under domestication.
3. Experiments with different nut trees which seem suited to Kansas conditions.
4. Ringing and pruning of trees in nursery, vineyard, and orchard.
5. Experiments in the growing of vegetables, to assist in the introduction of valuable sorts for the western portions of Kansas.
6. Variety tests of new fruits seemingly adapted to the state.
7. Taking of test temperatures and data to determine the depth and protective value of mulches.
8. Determining rate of growth of pines and best time to transplant conifers.
9. A study of the influence of stock and cion in grafting.
10. Spraying experiments with fungicides and insecticides. A study of the life-history of a number of insect pests of the farm, orchard, and garden.

The veterinary department has experimented along the following lines, viz.: (1) Tuberculosis and the tuberculin test, in connection with which three herds (comprising a total of ninety-five animals) were tested, and *post mortem* examinations made on the reacting animals, all of which showed positive evidence of disease. (2) A bulletin entitled "Bovine Tuberculosis" was published. (3) Experiments were made to study the cause and nature of stringy milk and mastitis in cows. (4) An infectious disease of the genital organs of yearling heifers was studied, and a remedy found. (5) Experiments with remedies for roup in poultry. (6) Experiments to determine efficacy of sulphur fumes for disinfecting buildings. (7) Experiments with rabies in horses. (8) Protective inoculation against swine-plague. (9) Bacteriological analysis of milk and cheese. (10) A bacteriological laboratory for the manufacture of blackleg protective virus has been equipped and put into operation. Still other experiments have been inaugurated.

The chemical department has continued the work begun upon soil moisture, and has inaugurated additional experiments to test the effects of various fertilizers upon moisture conservation. It has also continued the investigation of the adaptability of the state to the production of sugar-beets of good quality. It is hoped that the present season may conclude the work necessary on this point. Digestion experiments have been performed upon alfalfa at three stages of growth, and upon prairie hay, and the analytical work is now in progress. The department has made many analyses incident to the co-operative experiment in breeding maize of higher protein content.

The experimental work of the botanical department during the past year has been chiefly along three lines: First, a study of our native grasses and other forage plants, especially in reference to their adap-

tability to grazing. Secondly, experiments in seed breeding, carried on in co-operation with the farm department. Numerous crosses of wheat, corn, oats and Kafir-corn have been made, and conditions necessary to success studied. Thirdly, observations on alfalfa-root nodules, also in co-operation with the farm department. Two parties made field investigations through central and western Kansas, touching upon this and also upon methods of culture of alfalfa.

The funds for the work of the Experiment Station are received directly from the federal government, and an annual report of the expenditure of such funds is made to the agricultural department at Washington. The annual fund of \$15,000 has been expended and accounted for. Within the biennium bulletins have been published as follows:

Bulletins Published in 1896-'97.

- No. 59, Experiments with Wheat.
- No. 60, Steer-Feeding Experiments—Series V.
- No. 61, Kafir-Corn and Soy-Bean Meal for Pigs.
- No. 62, Corn Smut.
- No. 63, Experiments with Oats.
- No. 64, Experiments with Corn.
- No. 65, Grafting the Apple.
- No. 66, Fourth Report on Kansas Weeds—Fruit and Seeds.
- No. 67, Steer-Feeding Experiments—Series VI.
- No. 68, Soil Moisture.
- No. 69, Texas Itch.

Bulletins Published in 1897-'98.

- No. 70, Vegetable Growing.
- No. 71, Experiments with Wheat.
- No. 72, Data on the Growth of Young Stock.
- No. 73, Miscellaneous Fruit Notes.
- No. 74, Experiments with Oats.
- No. 75, Investigation of Root Development of Some Forage Plants.
- No. 76, Fifth Report on Kansas Weeds—Vegetative Propagation of Perennial Weeds.
- No. 77, Some Insects Injurious to the Orchard.
- No. 78, Sugar-Beets.
- No. 79, Bovine Tuberculosis.
- No. 80, Sixth Report on Kansas Weeds—Distribution, and Other Notes.

Appropriations by the Last Legislature.—The appropriations made by the last legislature were all carefully expended, as reported elsewhere, except the balances shown in the following tables:

1896-'97.

Farm implements.....	\$0 03
Coal—freight and hauling.....	3 70
Care of funds.....	38 47
Deficiency in current expense.....	10
Regents—mileage and per diem.....	4 60
Total.....	\$46 90

1897-'98.

Electric lights.....	\$0 11
Steam-boiler.....	1 00
General repairs.....	15
Farm fences.....	02
Rent.....	371 00
Current expense.....	33
Care of funds.....	05
Regents—mileage and per diem.....	193 80
Total.....	\$566 46

The appropriation bill providing for "accrued and accruing rent" on the house occupied by the President of the College was so drawn that all unexpended by June 30, 1898, was made unavailable; \$371 on this account reverted to the treasury, leaving the college to pay the rent for the entire year of 1898-'99.

The Endowment.—Through the purchase of bonds at a discount, the endowment fund has increased slightly since the date of the last biennial report, at which time it amounted to \$502,491.60; it now amounts to \$503,478.70, and is invested as follows:

School bonds, ten per cent.....	\$100 00
School bonds, seven per cent.....	28,619 45
School bonds, six per cent.....	114,067 26
School bonds, five per cent.....	200 00
Municipal bonds, seven per cent.....	400 00
Municipal bonds, six per cent.....	315,375 40
Municipal bonds, five per cent.....	36,300 00
Notes and contracts, ten per cent.....	3,394 47
Notes and contracts, eight per cent.....	1,500 00
Notes and contracts, seven per cent.....	1,200 00
Cash awaiting investment.....	2,322 12
Total.....	\$503,478 70

The tendency of interest rates steadily to fall is constantly felt by the authorities of the College in their efforts to invest the College funds advantageously. Safe seven-per-cent Kansas bonds are out of the market, while good Kansas six-per-cents are scarce. Good bonds in old Oklahoma, however, in cases have been available at seven per cent, and the policy mentioned in the last report of purchasing such bonds has been continued. The amount of bonds thus purchased during the biennium amounts to the sum named below.

Kansas five per cent.....	\$1,300 00
Kansas six per cent.....	28,700 00
Oklahoma six per cent.....	33,400 00
Oklahoma seven per cent.....	14,729 00
Total.....	\$78,129 00

Annual Income.—The total resources of the College for all purposes during the two years past have been as follows:

1896-'97.	
From interest on endowment	\$28,669 10
From annual payment, act of congress, 1890	22,000 00
From annual appropriation, station act of congress, 1887	15,000 00
From sales, etc	3,115 41
Legislative appropriations: lump (deficiency).....	10,000 00
Legislative appropriations: specific.....	8,100 00
Total.....	\$86,884 51
1897-'98.	
From interest on endowment	\$27,676 99
From annual payment, act of congress, 1890	23,000 00
From annual appropriation, station act of congress, 1887	15,000 00
From sales, etc.....	6,713 90
Legislative appropriations: lump (current expenses).....	5,000 00
Legislative appropriations: specific.....	27,350 00
Total.....	\$104,740 89

Pecuniary Needs.—The income of the College from the Morrill fund has been increasing at the rate of \$1000 annually since the passage of the act in 1890. In the year 1899–1900 this increase, however, will have reached its limit of \$25,000. While this increase has been in progress, the income from the endowment, as noted above, has been steadily shrinking. At the same time the College has been growing in all its departments. Not only so, but the time has apparently come when the institution is about to enter upon a period of expansion such as a healthy institution for higher education not infrequently experiences at some time in its history. That it should thus expand there can be no question. The growth in importance of agriculture and its cognate arts and sciences, horticulture, entomology, veterinary science, and chemistry; the need for teaching and training in the mechanic arts and domestic sciences; the increasing dependence of the state upon knowledge and skill in the arts of production, and of distribution as well, if it is to hold its own in competition with other commonwealths, and especially with those of the Atlantic seaboard, all demand that an institution devoted to the cultivation of agriculture and the mechanic arts, and to the preparation for their work of those who must exploit the mine, extract from the soil its wealth, and control the machinery which in continually larger measure must aid in the work of production, shall put on its full strength and serve the state as only such an institution can serve it. But funds are as essential to an institution of learning as is food to the horse or coal to the furnace. The College, however, possesses an income which not only fails to expand, but which is absolutely declining. That such a condition must soon grow intolerable is evident.

We would call attention to the fact that the burden imposed by this institution upon the state is slight. Its endowment, now yielding about \$28,000, was originally received directly from the federal government. The Morrill fund, authorized by the act of 1890, now paying \$24,000, comes directly from the federal treasury; the same is true of the Hatch fund of \$15,000, provided by the act of 1887. Its income from sales, etc., does not entail one cent of tax upon the people, either of the state or of the nation. From the state the College has received during the past twelve years some \$18,000 annually, including appropriations for buildings, repairs, and all other purposes—a tax amounting to about five cents upon each Kansan paying taxes on \$1000, and owning, therefore, about \$3000 worth of property. In view of the above, it is earnestly recommended, first, that the legislature appropriate for each year of the coming biennium the sum of \$30,000, being somewhat more than the average amount derived from the endowment fund during the last two years (\$28,194.76), and itself provide for the future investment of that fund, thus relieving the College of stringency during such time as may be spent in collecting its interest on delinquent bonds; second, that to provide against the necessity of future special appropriations, it establish a fixed charge of one-sixth of a mill against the assessed valuation of the property of the state, a tax which would yield about \$53,000 per annum; and third, that it appropriate \$40,000 for the erection and equipment of a dairy building and the purchase of a dairy herd, as set forth in the accompanying report of the professor of agriculture.

Respectfully submitted.

J. N. LIMBOCKER,
C. B. HOFFMAN,
T. J. HUDSON,
GEO. M. MUNGER,
W. H. PHIPPS,

Board of Regents.

KANSAS STATE AGRICULTURAL COLLEGE, June 30, 1898.

NOTE.—Regent Mrs. Susan J. St. John was absent at the time the signatures were affixed.

FINANCIAL REPORTS.

Loan Commissioners' Reports.

To the Board of Regents:

MANHATTAN, KAN., June 30, 1897.

GENTLEMEN—I herewith hand you my report of investments made for the endowment fund of the State Agricultural College for the year ending June 30, 1897:

Invested in county bonds, 6 per cent.....	\$14,000 00
Municipal bonds, 6 per cent.....	12,455 00
School-district bonds, 7 per cent. (Oklahoma).....	5,716 30
School-district bonds, 6 per cent.....	2,200 00
School-district bonds, 5 per cent.....	300 00
Municipal bonds, 5 per cent.....	905 00
Total.....	\$35,576 30

Respectfully submitted. C. R. NOE, *Loan Commissioner*.

The above report gives the amounts actually invested. Some of these bonds were bought below par. The discount being equivalent to an increase of endowment, the total endowment is shown by the Secretary's books to have been invested as follows, for the year 1896-'97:

Invested in school bonds, 7 per cent.....	\$5,954 00
“ “ “ 6 per cent.....	2,200 00
“ “ “ municipal bonds, 6 per cent.....	26,500 00
“ “ “ 5 per cent.....	1,300 00
Total.....	\$35,954 00

To the Board of Regents:

GENTLEMEN—I herewith present my report of investments made for the endowment fund of the State Agricultural College for the year ending June 30, 1898:

School bonds purchased, 7 per cent.....	\$8,775 00
Municipal bonds purchased, 6 per cent.....	33,400 00
Total.....	\$42,175 00

The total amount of warrants drawn in purchase of these bonds, some of which were secured at a discount, is \$41,040.55, increasing the face of the total endowment by \$1,134.45. Respectfully submitted.

T. J. HUDSON, *Loan Commissioner*.

Treasurers' Reports.

To the Board of Regents:

GENTLEMEN—Herewith find my report for the period from July 1, 1896, to April 1, 1897.

INCOME ACCOUNT.

Received from state treasurer, interest.....	\$25,053 17
“ “ “ “ act of congress, August, 1890.....	22,000 00
“ “ “ “ deficiency appropriation.....	9,976 56
“ “ executive department.....	12 00
“ “ farm department.....	2,503 92
“ “ horticultural department.....	900 03

Received from chemical department.....		\$25 28
“ “ mechanical department.....		1,890 47
“ “ printing department.....		43 73
“ “ botanical department.....		324 58
“ “ domestic department.....		234 65
“ “ veterinary department.....		11 22
“ “ sewing department.....		11 30
“ “ military department.....		16 00
Total.....		\$63,005 91
Approved vouchers due July 1, 1896.....	\$16,589 71	
“ “ presented, to April, 1897.....	45,079 49	
		\$61,669 20
Balance on hand April 1, 1897.....		\$1,336 71

APPROPRIATIONS.

Library books:		
Received from state auditor.....		\$655 45
Paid on approved vouchers.....		655 45
Farm implements:		
Received from state auditor.....		164 80
Paid on approved vouchers.....		164 80
Coal—freight and hauling:		
Received from state auditor.....		1,496 30
Paid on approved vouchers.....		1,496 30
Water-supply:		
Received from state auditor.....		500 00
Paid on approved vouchers.....		500 00
Salary of loan commissioner:		
Received from state auditor.....		150 00
Paid on approved vouchers.....		150 00
Care of funds:		
Received from state auditor.....		80 27
Paid on approved vouchers.....		80 27
Regents—mileage and per diem:		
Received from state auditor.....		825 80
Paid on approved vouchers.....		825 80
General repairs:		
Received from state auditor.....		1,000 00
Paid on approved vouchers.....		1,000 00
Covering steam-pipes:		
Received from state auditor.....		1,140 34
Paid on approved vouchers.....		1,140 34
Roads, walks, and bridge:		
Received from state auditor.....		300 00
Paid on approved vouchers.....		300 00
Current expense:		
Received from state auditor.....		9,976 56
Paid on approved vouchers.....		9,976 56

Respectfully submitted. C. B. DAUGHTERS, *Treasurer.*

To the Board of Regents:

GENTLEMEN—Herewith find my report for the period from April 1, 1897, to June 30, 1897:

INCOME ACCOUNT.

Balance on hand April 1, 1897.....	\$1,336 71
Received from state treasurer, interest.....	3,636 35
“ “ executive department.....	42 88
“ “ farm department.....	898 68
“ “ horticultural department.....	1,255 00
“ “ chemical department.....	11 97
“ “ mechanical department.....	608 39
“ “ printing department.....	87 90
“ “ household economics department.....	332 40
“ “ botanical department.....	20 00
“ “ veterinary department.....	25 15

Received from sewing department.....	\$6 25
“ “ library department.....	2 56
“ “ entomological department.....	80 88
“ “ loan	6 30
Total.....	\$8,350 92
Approved vouchers presented, to June 30, 1897	15,736 65
Approved vouchers due June 30, 1897.....	\$7,385 73

APPROPRIATIONS.

Library books:	
Received from state auditor	\$344 55
Paid on approved vouchers	344 55
Additions to natural-history museum:	
Received from state auditor	200 00
Paid on approved vouchers	200 00
Farm implements:	
Received from state auditor	85 17
Paid on approved vouchers	85 17
Drawing—models and patterns:	
Received from state auditor	100 00
Paid on approved vouchers	100 00
Water-supply:	
Received from state auditor	87 50
Paid on approved vouchers	87 50
Salary of loan commissioner:	
Received from state auditor	150 00
Paid on approved vouchers	150 00
Care of funds:	
Received from state auditor	31 26
Paid on approved vouchers	31 26
Regents—mileage and per diem:	
Received from state auditor	669 60
Paid on approved vouchers	669 60
Covering steam-pipes:	
Received from state auditor	159 66
Paid on approved vouchers	159 66
Current expense:	
Received from state auditor	23 34
Paid on approved vouchers	23 34

Respectfully submitted.

C. B. HOFFMAN, *Treasurer.**To the Board of Regents:*

GENTLEMEN—Herewith find my report for the period from July 1, 1897, to June 30, 1898.

INCOME ACCOUNT.

Received from state treasurer, interest.....	\$27,700 00
“ “ “ “ act of congress, August, 1890	23,000 00
“ “ “ “ current-expense appropriation.....	4,999 67
“ “ executive department.....	199 11
“ “ farm department.....	4,912 09
“ “ horticultural and entomological department.....	1,051 89
“ “ chemical department.....	167 78
“ “ mechanical department.....	3,083 30
“ “ printing department	698 25
“ “ botanical department.....	423 60
“ “ household economics department	1,318 18
“ “ veterinary department	17 95
“ “ sewing department.....	8 25
“ “ library department.....	91 14
“ “ industrial art department	22 50
“ “ loan	100 00
Total.....	\$87,793 71
Approved vouchers due July 1, 1897.....	\$7,385 73
“ “ presented, to June 30, 1898	68,510 02
	75,895 75
Approved vouchers due June 30, 1898	\$8,102 04

APPROPRIATIONS.

Domestic science hall:	
Received from state auditor	\$16,000 00
Paid on approved vouchers	16,000 00
Barn roof:	
Received from state auditor	500 00
Paid on approved vouchers	500 00
Electric lights:	
Received from state auditor	499 89
Paid on approved vouchers	499 89
Steam-boiler:	
Received from state auditor	449 00
Paid on approved vouchers	449 00
Iron shops—machinery and tools:	
Received from state auditor	500 00
Paid on approved vouchers	500 00
Machine-shop—clothes room:	
Received from state auditor	150 00
Paid on approved vouchers	150 00
Telephone system:	
Received from state auditor	150 00
Paid on approved vouchers	150 00
Painting roofs:	
Received from state auditor	200 00
Paid on approved vouchers	200 00
General repairs:	
Received from state auditor	999 85
Paid on approved vouchers	999 85
Farm fences:	
Received from state auditor	149 98
Paid on approved vouchers	149 98
Farm implements:	
Received from state auditor	200 00
Paid on approved vouchers	200 00
Horticultural tools and implements:	
Received from state auditor	100 00
Paid on approved vouchers	100 00
Library furniture:	
Received from state auditor	200 00
Paid on approved vouchers	200 00
Class room furniture:	
Received from state auditor	200 00
Paid on approved vouchers	200 00
Agricultural museum:	
Received from state auditor	200 00
Paid on approved vouchers	200 00
Horticultural museum:	
Received from state auditor	200 00
Paid on approved vouchers	200 00
Drawing—furniture, models, and patterns:	
Received from state auditor	300 00
Paid on approved vouchers	300 00
English—charts and illustrations:	
Received from state auditor	100 00
Paid on approved vouchers	100 00
History—charts and illustrations:	
Received from state auditor	100 00
Paid on approved vouchers	100 00
Fire protection—hose and extinguishers:	
Received from state auditor	300 00
Paid on approved vouchers	300 00
Accrued and accruing rent:	
Received from state auditor	629 00
Paid on approved vouchers	629 00

Current expense:	
Received from state auditor.....	\$4,999 67
Paid on approved vouchers.....	4,999 67
Coal—freight and hauling:	
Received from state auditor.....	1,500 00
Paid on approved vouchers.....	1,500 00
Water-supply:	
Received from state auditor.....	500 00
Paid on approved vouchers.....	500 00
Salary of loan commissioner:	
Received from state auditor.....	300 00
Paid on approved vouchers.....	300 00
Care of funds:	
Received from state auditor.....	149 95
Paid on approved vouchers.....	149 95
Regents—mileage and per diem:	
Received from state auditor.....	1 206 20
Paid on approved vouchers.....	1,206 20
Library books:	
Received from state auditor.....	1,000 00
Paid on approved vouchers.....	1,000 00

Respectfully submitted.

C. B. HOFFMAN, *Treasurer*.

Secretary's Report.

To the Board of Regents:

GENTLEMEN—Herewith are presented, in concise tabular form, transcripts from the books of this office, showing the condition of the endowment fund at the close of each month, the sources of income each year, the summary of the annual inventory, and the expenditures and receipts of each College department, for the years ending June 30, 1897, and June 30, 1898. There are also added, as required by law, explicit statements of the items of expenditure under special appropriations for the same year.

Full ledger accounts of the invested funds, showing the exact condition in each investment of every kind, are kept from data furnished through triplicate receipts by the state treasurer, after original entry of each bond purchased, as to both principal and coupons. Accounts are also kept with the state treasurer and the College treasurer, the several departments of the College, special appropriations, and the distinct funds in charge of the Board of Regents. Vouchers for all expenditures, in duplicate or triplicate, and duplicate receipts for all cash received, with all general accounts, have been carefully audited, as you are aware, by the Board of Regents, and the final summary has been carefully tested by comparison of the reports of other officers herewith presented. All papers are filed, readily accessible to any one inquiring into the financial condition of the College.

A separate account is kept with the Experiment Station in both the secretary's and treasurer's offices. A transcript of each is published

in the annual report of the Station. This report is submitted to the governor on the 1st day of February in each year.

Trusting that this report will be found in all respects correct and satisfactory, it is respectfully submitted for your consideration.

COLLEGE, June 30, 1898.

THOS. E. WILL, *Secretary*.

SOURCES OF INCOME.

	1896-'97.	1897-'98.
<i>Through state treasurer.</i>		
Payment of United States treasurer, act of congress, 1890.....	\$22,000 00	\$23,000 00
Interest on school bonds, 7 per cent.....	629 15	2,280 76
" " 6 " 	6,520 22	4,366 49
" " 5 " 	25 00	45 00
" municipal bonds, 5 per cent.....	2,750 00	1,800 00
" " 7 " 	350 00	350 00
" " 6 " 	17,329 50	18,146 40
" real-estate securities, 8 per cent.....	120 00	120 00
" " 7 " 	294 00	84 00
" land contracts, 10 per cent.....	213 50	213 50
" delinquent interest.....	437 73	270 84
Totals.....	\$50,669 10	\$50,676 99
<i>College departments.</i>		
Appropriations, deficiency and current expense.....	\$9,999 90	\$4,999 67
Sales of produce, stock, etc.....	3,115 41	6,713 90
Labor and materials for repairs, etc.....	1,903 82	3,044 83
Labor and materials for station.....	4,281 31	2,333 81
Refunded voucher.....		1 50
Totals.....	\$19,300 44	\$17,093 71
Through state treasurer.....	50,669 10	50,676 99
Grand totals.....	\$69,969 54	\$67,770 70

CASH EXPENDITURES AND RECEIPTS, 1896-'97.

DEPARTMENTS.	State appropriations.	Expenditures.			Receipts.		Actual expense.	Actual receipts.
		Income fund.		Department transfers.	Cash.	Department transfers.		
		Instruction, etc.	Labor supplies, etc.					
Executive.....	\$12,996 20	\$4,033 05	\$5,130 61	\$322 66	\$54 88	\$62 33	\$9,369 11	.....
Farm.....	249 97	1,300 00	5,356 21	167 87	3,376 29	49 55	3,398 24	.....
Horticulture.....	300 00	1,836 68	3,189 73	124 33	2,155 03	113 90	2,881 81	.....
Chemistry.....	.....	3,066 66	424 73	11 43	37 25	7 20	3,458 37	.....
Mechanics.....	1,300 00	3,200 00	5,438 50	24 59	2,498 01	624 73	5,540 35	.....
Printing.....	.....	1,116 66	1,120 56	8 10	131 63	362 10	1,751 59	.....
Domestic.....	.....	1,533 33	866 12	66 61	567 05	.....	1,899 01	.....
Sewing.....	.....	1,270 00	52 46	8 53	17 55	.....	1,313 44	.....
Botany.....	.....	1,020 00	912 57	117 89	344 58	85	1,705 03	.....
Entomology and zoology.....	200 00	1,366 66	604 26	205 55	80 38	.....	2,096 09	.....
Veterinary and physiology.....	.....	1,820 00	183 50	12 85	36 37	4 70	975 28	.....
Library.....	1,000 00	683 33	858 77	39 64	2 56	.....	1,579 18	.....
Physics.....	.....	1,600 00	67 89	84 80	.....	.....	1,752 69	.....
Industrial art.....	100 00	1,830 38	212 62	6 11	.....	.....	2,049 11	.....
Music.....	.....	1,543 84	64 56	1 65	.....	.....	1,610 05	.....
Mathematics.....	.....	2,889 80	5 83	3 00	.....	.....	2,898 63	.....
English.....	.....	2,892 72	110 95	4 70	.....	.....	3,008 37	.....
History and political science.....	.....	1,600 00	1 75	.....	.....	.....	1,601 75	.....
Economic science.....	.....	1,612 00	1 10	12 35	.....	.....	1,625 45	.....
Military.....	.....	.....	199 64	2 70	16 00	.....	186 34	.....
Loan, treasury, and regents.....	1,906 93	.....	798 67	.....	60,672 38	.....	.....	\$59,873 71
Totals.....	\$18,053 10	\$35,215 11	\$25,601 03	(\$1,225 36)	\$69,989 96	(\$1,225 36)	\$50,689 89	\$59,873 71
In state treasury.....	.....	.....	.....	\$20 40	.....	.....	\$20 40	.....
Grand totals.....	.....	.....	.....	\$60,836 54	\$69,989 96	.....	\$50,720 29	\$59,873 71
Balance.....	.....	.....	.....	9,153 42	.....	.....	9,153 42	.....

CASH EXPENDITURES AND RECEIPTS, 1897-'98.

DEPARTMENTS.	State appropriations.	Expenditures.				Receipts.		Actual expense.	Actual receipts.
		Income fund.		Department transfers.	Cash.	Department transfers.			
		Instruction, etc.	Labor, supplies, etc.						
Executive.....	*\$25,828 41	\$4,188 89	\$6,263 10	\$698 95	\$159 11	\$208 75	\$10,743 08		
Farm.....	1,049 98	1,073 84	6,419 04	358 68	4,912 09	316 46	2,623 01		
Horticulture and entomology.....	300 00	1,919 00	2,987 67	88 45	1,051 89	133 45	3,809 78		
Chemistry.....		2,764 17	793 60	91 47	167 78	29 25	3,452 21		
Mechanics.....	1,099 00	4,136 66	5,425 69	29 18	3,083 30	963 21	5,545 02		
Printing.....		90 00	3,756 69	77 28	3,698 25	450 95	3,854 77		
Domestic.....		1,526 66	2,094 27	341 22	1,318 18		2,643 97		
Sewing.....		1,177 01	49 32		8 25	21	1,217 81		
Botany.....		1,630 84	895 67	64 43	423 60		1,627 34		
Veterinary and zoology.....		1,218 85	605 95	153 39	17 95	25 70	1,334 55		
Library.....	1,200 00	790 00	1,139 68	127 22	91 14		1,965 76		
Physics.....	150 00	1,693 66	174 16	64 56		500 00	1,432 38		
Industrial art.....	300 00	2,025 05	109 32	352 89	22 50	31 15	2,443 61		
Music.....		1,796 83	6 75	6 66			1,810 24		
Mathematics.....		3,110 70	25 80	153 95		5 00	3,285 45		
English.....	100 00	2,722 80	44 15	5 25			2,772 20		
History and political science.....	100 00	1,333 66	15 75	33 76			1,383 17		
Economic science.....		2,043 41	117 70	17 60		75 00	2,103 71		
Military.....			319 70	74 22			383 92		
Oratory.....		1,542 25	65 85				1,608 10		
Loan, treasury, and regents.....	1,656 15		135 87		55,799 67			\$55,663 80	
Totals.....									
In state treasury.....	\$31,783 54	\$37,064 29	\$31,445 73	(\$2,739 16)	\$67,793 71	(\$2,739 16)	\$56,380 11	\$55,663 80	
				23 01			23 01		
Grand totals.....				\$68,533 03	\$67,793 71		\$56,403 12	\$55,663 80	
Balance.....					739 32			739 32	

* Includes domestic science hall and equipment, valued at \$16,000.

NOTE.—State warrant No. 161, amount \$1,850, was issued by the state treasurer on July 6, 1898; of this amount \$810 was for interest accrued and paid prior to June 30, 1898, and should have been credited to income fund for fiscal year 1897-'98. The net income for the biennium is \$138,583.67; net expenditure is \$128,326.16. The deficit which existed at the beginning of the biennium is therefore reduced by \$9,257.51, and now stands at \$7,292.04.

ENDOWMENT FUND MONTHLY BALANCES, 1896-'97.

MONTHS.	School bonds.				Municipal bonds.			Land contracts, 10 per cent.	Real-estate securities.		Cash.	Endowment.	
	5 per cent.	6 per cent.	7 per cent.	10 per cent.	5 per cent.	6 per cent.	7 per cent.		8 per cent.	Total.		Pro-ductive.	
1896.													
July.....	\$700	\$132,806 19	\$16,057 35	\$100	\$35,000	\$298,750 00	\$400	\$3,394 47	\$1,400	\$1,500	\$11,858 54	\$501,966 55	\$490,118 01
August.....	700	131,760 56	16,057 35	100	35,000	304,250 00	400	3,394 47	1,400	1,500	7,419 17	501,981 55	494,562 38
September	700	131,760 56	18,076 35	100	35,000	304,750 00	400	3,394 47	1,400	1,500	4,941 12	502,022 50	497,081 38
October	700	132,660 56	19,651 35	100	36,300	304,750 00	400	3,394 47	1,400	1,500	1,354 87	502,211 25	500,866 38
November	700	132,660 56	20,251 35	100	36,300	304,750 00	400	3,394 47	1,400	1,500	784 87	502,241 25	501,456 38
December	700	132,660 56	20,611 35	100	36,300	304,750 00	400	3,394 47	1,400	1,500	442 87	502,254 25	501,816 38
1897.													
January.....	700	131,200 56	20,611 35	100	36,300	304,250 00	400	3,394 47	1,400	1,500	2,402 87	502,254 25	499,856 38
February.....	700	128,968 86	20,887 50	100	36,300	303,250 00	400	3,394 47	1,400	1,500	5,898 42	502,299 25	496,960 83
March	700	132,668 86	20,687 50	100	36,300	299,250 00	400	3,394 47	1,400	1,500	5,898 42	502,299 25	496,400 83
April	700	132,668 86	20,687 50	100	36,300	304,750 00	400	3,394 47	1,400	1,500	443 42	502,344 25	501,900 83
May	700	132,668 86	20,687 50	100	36,300	303,950 00	400	3,394 47	1,400	1,500	1,443 42	502,344 25	500,900 83
June.....	700	132,243 86	20,687 50	100	36,300	304,450 00	400	3,394 47	1,400	1,500	1,368 42	502,344 25	500,975 83

ENDOWMENT FUND MONTHLY BALANCES, 1897-'98.

1897.													
	\$300	\$129,938 86	\$20,560 50	\$100	\$36,300	\$303,200 00	\$400	\$3,394 47	\$1,200	\$1,500	\$5,450 42	\$502,344 25	\$493,893 83
July.....	300	122,727 28	20,460 50	100	36,300	296,700 00	400	3,394 47	1,200	1,500	19,262 02	502,344 25	483,082 23
August.....	300	122,527 26	20,460 50	100	36,300	301,700 00	400	3,394 47	1,200	1,500	14,712 02	502,594 25	487,882 23
September	300	122,527 26	29,235 50	100	36,300	301,200 00	400	3,394 47	1,200	1,500	6,450 77	502,608 00	496,157 23
October	300	122,327 26	29,235 50	100	36,300	300,800 00	400	3,394 47	1,200	1,500	7,050 77	502,608 00	495,557 23
November	300	121,927 26	29,235 50	100	36,300	309,400 00	400	3,394 47	1,200	1,500	—	503,035 60	503,757 23
December	300												
1898.													
January	300	120,002 26	29,235 50	100	36,300	306,650 00	400	3,394 47	1,200	1,500	3,953 37	503,035 60	499,082 23
February.....	300	116,992 26	29,235 50	100	36,300	297,275 40	400	3,394 47	1,200	1,500	16,381 02	503,035 60	486,654 58
March	300	114,167 26	28,619 45	100	36,300	296,275 40	400	3,394 47	1,200	1,500	20,779 02	503,035 60	482,256 58
April	300	114,167 26	28,619 45	100	36,300	315,375 40	400	3,394 47	1,200	1,500	1,922 12	503,478 70	501,556 58
May	300	114,167 26	28,619 45	100	36,300	315,375 40	400	3,394 47	1,200	1,500	2,122 12	503,478 70	501,356 58
June.....	300	114,067 26	28,619 45	100	36,300	315,375 40	400	3,394 47	1,200	1,500	2,322 12	503,478 70	501,156 58

DELINQUENT BONDS AND COUPONS, JUNE 30, 1898.

COUNTY.	Per cent.	District number.	Bond.		Coupons.		Due.
			No.	Amount.	No.	Amount.	
KANSAS.							
Barber	6	37			1	\$15 00	Jan. 1, 1897
"	6	37			1	15 00	July 1, 1897
"	6	37			4	60 00	Jan. 1, 1898
Barton	6	1	24	\$1,125 40			July 1, 1897
Butler, Augusta	5	Refund.			2	25 00	Mar. 19, 1898
Chautauqua	6	10	Pt. 1	66 86			July 1, 1894
Council Grove	6				9	270 00	Jan. 1, 1897
"	6				9	270 00	July 1, 1897
"	6				9	270 00	Jan. 1, 1898
Geary, Junction City	6	Refund.			30	900 00	Mar. 1, 1898
Harper, Anthony	6	R. R.			19	570 00	July 1, 1896
"	6	R. R.			19	570 00	Jan. 1, 1897
"	6	R. R.			19	570 00	July 1, 1897
"	6	R. R.			19	570 00	Jan. 1, 1898
"	6	1	2	1,000 00			July 1, 1897
"	6	57	1	174 00			Jan. 1, 1897
"	6	57	1	174 00			" 1, 1898
Jewell	6	76	6	3,000 00			" 1, 1898
"	7	103	Pt. 1	155 85			July 1, 1895
"	6	103	1	200 00			" 1, 1896
Pratt	6	Refund.			9	135 00	" 1, 1895
"	6				9	135 00	Jan. 1, 1896
"	6				9	135 00	July 1, 1896
"	6				9	135 00	Jan. 1, 1897
"	6				9	135 00	July 1, 1897
"	6				9	135 00	Jan. 1, 1898
"	6	57			1	12 00	" 1, 1898
Reno	6	95	1	100 00			" 1, 1898
"	6	154	1	300 00			" 1, 1898
Riley	6	39	1	120 00			" 1, 1898
"	6	65	1	100 00			" 1, 1897
"	6	65	1	100 00			" 1, 1898
" Manhattan	6	Refund.			4	120 00	Sept. 1, 1897
"	6				5	150 00	Mar. 1, 1898
Wabaunsee	6	1			1	3 00	Jan. 1, 1898
Washington	6	78	1	500 00			July 1, 1894
Wyandotte, Argentine	6		1	500 00			Feb. 1, 1897
"	6		2	1,000 00			" 1, 1898
James Hicks, contract				1,200 00			
Mrs. S. C. Baker, NE ¼, 10, 9, 5,	10					87 50	
D. C. Evans, NE ¼, 12, 10, 5	10					756 00	
OKLAHOMA.*							
Canadian, El Reno	7	14			1	9 63	Feb. 10, 1898
Kay, Newkirk	7	72			2	14 00	Jan. 1, 1897
"	7	72			2	21 00	July 1, 1897
"	7	72			2	21 00	Jan. 1, 1898
Kingfisher, Kingfisher	7	21			4	21 00	July 1, 1897
"	7	21			4	21 00	Jan. 1, 1898
"	7	65			1	10 50	July 1, 1897
"	7	65			1	10 50	Jan. 1, 1898
Lincoln, Chandler	6	Refund.			27	225 00	May 22, 1898
Logan, Guthrie	7	1			1	7 47	Jan. 1, 1897
"	7	1			1	14 00	July 1, 1897
"	7	1			1	14 00	Jan. 1, 1898
"	7	3			1	6 27	" 1, 1897
"	7	3			1	13 13	July 1, 1897
"	7	3			1	13 13	Jan. 1, 1898
"	7	28			1	8 75	" 1, 1897
"	7	28			1	17 50	July 1, 1897
"	7	28			1	17 50	Jan. 1, 1898
"	7	31			2	13 90	" 1, 1897
"	7	31			2	17 50	July 1, 1897
"	7	31			2	17 50	Jan. 1, 1898
"	6	59			2	19 20	" 1, 1897
"	6	59			2	19 20	July 1, 1897
"	6	59			2	19 20	Jan. 1, 1898
"	7	61			8	28 00	July 1, 1896
"	7	61			8	28 00	Jan. 1, 1897
"	7	61			8	28 00	July 1, 1897
"	7	61			8	28 00	Jan. 1, 1898
"	6	63			1	12 33	Jan. 1, 1897

* NOTE—Owing to a misunderstanding, now cleared up, as to whether interest was properly payable at the state treasury, at Topeka, or at the fiscal agency, in New York city, payment of interest on numerous Oklahoma bonds was delayed.

DELINQUENT BONDS AND COUPONS—CONCLUDED.

COUNTY.	Per cent.	Dist. number.	Bond.		Coupons.		Due.
			No.	Amount.	No.	Amount.	
OKLAHOMA — concluded.							
Logan	6	63	.....		1	\$12 33	July 1, 1897
"	6	63	.....		1	12 33	Jan. 1, 1898
"	6	66	.....		1	10 50	July 1, 1896
"	6	66	.....		1	10 50	Jan. 1, 1897
"	6	66	.....		1	10 50	July 1, 1897
"	6	66	.....		1	10 50	Jan. 1, 1898
"	7	97	.....		1	7 78	" 1, 1897
"	7	97	.....		1	14 00	July 1, 1897
"	7	97	.....		1	14 00	Jan. 1, 1898
Payne, Stillwater.....	6	Refund.	.....		70	258 00	May 26, 1898
"	7	11	.....		1	14 00	Jan. 1, 1898
Pottawatomie, Tecumseh	7	24	.....		1	12 60	July 1, 1897
"	7	24	.....		1	12 60	Jan. 1, 1898
"	7	27	.....		1	16 35	" 1, 1898
"	7	28	.....		1	7 00	" 1, 1897
"	7	28	.....		1	7 00	July 1, 1897
"	7	28	.....		1	7 00	Jan. 1, 1898
Woods, Alva twp., Alva N. S.	6	.....	.....		10	150 00	" 1, 1898

SUMMARY OF COLLEGE INVENTORY.

	June 30, 1896-'97.	June 30, 1897-'98.
<i>Executive.</i>		
Farm, grounds, dwellings, and water-works.....	\$47,485 00	\$47,485 00
College hall	79,000 00	79,000 00
Armory.....	11,250 00	11,250 00
Mechanics hall.....	11,700 00	11,700 00
Horticultural hall	4,200 00	4,200 00
Chemical laboratory.....	9,600 00	9,600 00
Library and science hall.....	57,550 00	57,550 00
Domestic science hall.....	650 00	15,000 00
Steam-heating plant and boiler-house.....	18,300 00	18,300 00
Electric lights and telephone system.....	650 00	650 00
In college hall, furniture and supplies.....	1,300 95	1,482 74
In armory.....	149 72	88 00
In mechanics hall.....	60 45	10 75
In horticultural hall.....	32 25	32 25
In chemical laboratory.....	192 16	163 75
In science hall.....	305 60	508 64
In president's office.....	690 75	553 74
In vault.....	548 62	1,133 27
In secretary's office.....	472 21	495 89
In chapel stage.....	106 00	106 00
Miscellaneous.....	403 85	370 70
Roofing slate on hand.....	60 00	.....
Columbian Exposition (cases, etc.).....	532 75	.....
In domestic science hall.....	.....	97 40
In reception room.....	189 00	.....
Totals.....	\$244,779 31	\$259,778 13
<i>Farm Department.</i>		
Buildings.....	\$10,800 00	\$10,695 00
Horses.....	275 00	225 00
Cattle—Dairy.....	.....	1,222 00
Shorthorns.....	2,515 00	.....
Aberdeen-Angus.....	220 00	.....
Herefords.....	790 00	.....
Holstein-Friesians.....	850 00	.....
Jerseys.....	875 00	.....
Sheep.....	115 00	.....
Swine—Poland-Chinas.....	388 00	.....
Berkshires.....	349 00	.....
Miscellaneous tools and supplies.....	502 29	451 80
Harness and leather goods.....	110 15	96 15
Office fixtures.....	350 45	532 78
Wells, fences, etc.....	1,660 50	1,703 22
Stores.....	966 16	926 04
Machinery and implements.....	2,007 59	1,929 29
Dairy apparatus.....	.....	696 95
Totals.....	\$22,774 14	\$18,478 23

SUMMARY OF COLLEGE INVENTORY—CONTINUED.

	June 30, 1897.	June 30, 1898.
<i>Botanical Department.</i>		
Microscopes and accessories.....	\$1,375 67	\$1,221 17
Furniture and cases.....	1,214 37	1,253 00
Bottles and jars.....	202 53	202 68
Supplies.....	91 46	113 67
Tools and apparatus.....	671 74	697 86
General herbarium.....	2,188 30	2,282 00
Kansas herbarium.....	2,138 20	2,925 30
Cryptogamic herbarium.....	657 64	864 00
Herbarium duplicates.....	2,673 21	2,000 00
Supplies to be used in museum.....	3 70	3 70
Specimens in museum.....	89 25	89 25
Totals.....	\$11,306 07	\$11,652 63
<i>Chemical Department.</i>		
Platinum ware.....	\$144 90	
Chemicals.....	215 95	\$298 00
Chemical apparatus.....	3,182 40	3,271 10
Minerals and rocks.....	2,230 00	3,477 00
Office furniture and supplies.....	162 35	145 85
Cases.....	1,247 00	
Analytical tables, etc.....	1,447 55	1,438 55
Totals.....	\$8,630 15	\$8,630 50
<i>English Department.</i>		
Cyclostyle.....	\$15 00	\$8 00
Pictures and frames.....	15 00	15 00
Chart illustrations, steel engravings, photographs and frames.....		100 00
Totals.....	\$30 00	\$123 00
<i>History and Political Science, Psychology and Logic.</i>		
Maps, charts and general equipments.....	\$134 79	\$317 54
<i>Horticulture.</i>		
Plantations.....	\$4,584 45	\$4,446 98
Greenhouse and lawn tools.....	229 40	297 45
Greenhouse, fixtures and stock.....	8,310 32	6,892 10
Horses and horse tools.....	438 95	681 70
Hand and garden tools.....	698 10	818 80
Office furniture and apparatus.....	1,224 37	284 17
Office and greenhouse heating apparatus.....		2,631 45
Photos and negatives.....	13 45	15 95
Supplies.....	78 47	68 45
Microscopes and appliances.....		83 55
Buildings.....	945 00	1,046 10
Museum.....		1,367 00
Bills receivable.....	144 58	67 00
Totals.....	\$16,667 09	\$18,699 70
<i>Entomology.</i>		
Furniture and office supplies.....		\$22 45
Laboratory apparatus.....		141 18
Microscopes and accessories.....		481 75
Chemicals.....		2 55
Insect collection and apparatus.....		1,829 90
Class-room supplies.....		5 00
Miscellaneous.....		1 25
Totals.....		\$2,484 08
<i>Domestic Science.</i>		
Furniture.....		\$304 82
Dishes and utensils.....		445 00
Provisions.....		39 49
Kitchen laboratory.....	\$655 65	
Dairy.....	131 35	
Totals.....	\$787 00	\$789 31

SUMMARY OF COLLEGE INVENTORY—CONTINUED.

	June 30, 1897.	June 30, 1898.
<i>Dining-Hall.</i>		
Furniture.....		\$492 20
Utensils.....		254 35
Supplies.....		11 58
Totals.....		\$758 13
<i>Industrial Art.</i>		
Furniture.....	\$1,196 15	\$1,537 85
Models and studies.....	655 30	666 10
Apparatus and materials.....	190 10	307 85
Totals.....	\$2,041 55	\$2,511 80
<i>Mathematical Department.</i>		
Surveying apparatus.....	\$1,292 00	\$1,263 50
Mathematical apparatus.....	56 75	56 75
Totals.....	\$1,348 75	\$1,320 25
<i>Mechanical Department.</i>		
Machine-shop and equipments.....	\$5,775 15	\$6,913 00
Wood shop and equipments.....	6,145 74	5,851 16
Foundry, equipments and supplies.....	1,109 80	1,087 14
Drawing-room.....		80 45
Blacksmith shop.....	1,211 00	1,257 63
Pipe-house, equipments and supplies.....	463 05	523 75
Blue-print room.....	31 50	32 50
Power-house.....	2,752 25	2,713 85
Boiler-room.....	5,386 35	5,718 02
Mason's supplies.....	9 10	
Office furniture.....	732 65	616 95
Bills receivable.....	718 82	1,295 74
Totals.....	\$24,335 41	\$26,090 19
<i>Military Department.</i>		
United States property.....		
College property.....	\$1,638 95	\$1,969 12
<i>Musical Department.</i>		
Instruments and charts.....	\$3,804 90	\$1,071 30
Furniture.....	51 25	58 57
Totals.....	\$3,856 15	\$1,129 87
<i>Oratory.</i>		
Office furniture.....		\$45 00
<i>Physics.</i>		
Telephone.....		\$281 00
General physical apparatus.....	\$448 00	512 30
Sound apparatus.....	95 10	98 10
Heat apparatus.....	125 00	129 20
Light apparatus.....	564 85	627 85
Electrical apparatus.....	1,803 90	1,966 90
Bells and lines.....	210 70	218 20
Telegraph.....	26 80	11 80
Meteorological apparatus.....	190 60	228 10
Cases, etc.....	597 00	152 35
Totals.....	\$4,062 15	\$4,225 80
<i>Veterinary Science and Physiology.</i>		
Furniture.....	\$2,174 25	
Anatomical.....	2,058 49	
Instruments.....	128 25	
Drugs and medicines.....	23 65	
Totals.....	\$4,384 64	

SUMMARY OF COLLEGE INVENTORY—CONCLUDED.

	June 30, 1897.	June 30, 1898.
<i>Veterinary and Zoological.</i>		
Office furniture.....		\$1,888 70
Miscellaneous supplies.....		173 37
Instruments.....		112 75
Museum furniture.....		3,923 79
Furniture in armory.....		532 50
Museum specimens.....		2,537 00
Total.....		\$9,168 11
<i>Entomology and Zoology.</i>		
Zoological collection.....	\$3,509 00	
Ethnological collection.....	30 00	
Geological collection.....	2,212 50	
Furniture and apparatus.....	3,302 31	
Microscopes and accessories.....	500 43	
Laboratory supplies.....	444 58	
Total.....	\$9,998 82	
<i>Printing Department.</i>		
Machinery and printing material.....	\$4,008 97	
Office furniture and fixtures.....	182 65	
Paper stock.....	121 20	
Bills receivable.....	62 15	
In composition room.....		\$1,867 30
In counting room.....		258 15
In press room.....		1,730 65
In stock room.....		426 35
Bills receivable.....		129 95
Totals.....	\$4,374 97	\$4,412 40
<i>Sewing.</i>		
Class room furniture.....		\$329 18
Office furniture.....		68 00
Supplies.....		52 50
Department furniture.....		473 13
Furniture.....	\$154 50	
Machines.....	290 00	
Cases and apparatus.....	204 95	
Totals.....	\$619 45	\$922 81
<i>Library.</i>		
Books and pamphlets.....	\$30,059 63	\$33,219 13
Furniture.....	3,956 94	4,190 03
Catalogues.....	2,738 25	2,822 50
Office furniture.....	142 48	159 03
Supplies.....	13 55	23 24
Miscellaneous.....	195 94	233 69
Totals.....	\$37,106 79	\$40,647 62
<i>Treasury Department.</i>		
Office furniture.....	\$13 70	\$13 20
Accounts receivable.....	39 60	242 60
Totals.....	\$53 30	\$255 80
Grand totals.....	\$398,959 48	\$414,410 02

DEPARTMENT REPORTS.

THE EXECUTIVE DEPARTMENT.

Report of Geo. T. Fairchild,

President, and Professor of Logic and Philosophy.*

To the Board of Regents:

GENTLEMEN—In closing my work as President of the College, after nearly eighteen years of service, it seems proper to present in full the report of my office for the year 1896-'97, with such a summary of the results of past years as will best show the condition of the College in all its departments. For all details of the several departments, beyond the merest outline, I beg leave to refer to the reports of the heads of those departments.

The year 1896-'97 has been one of unexampled prosperity in all the general requisites of growth and welfare. The attendance has not only been the largest in our College history, but has shown the largest growth as well. The general order has been excellent. The health of the whole body of students and faculty has been good, with the exception of the periodic inroad of measles during the winter. The progress in studies has been up to the usual standard, and the final results in general scholarship have been gratifying. The interest and support of the people of the state have been encouraging. The recognition of our work outside the state has been marked in many ways.

No change has occurred in the effective corps of instructors, although the addition of more than thirteen per cent. to attendance has made the burden of teaching heavier, especially in the first- and second-year classes. The addition of an instructor in rhetorical exercises would have relieved, had the financial condition warranted. The assistance of graduate students in several directions was secured, under authority granted me by the board. Reduced to a scale of daily classes of one hour each, the total for the year would be about 360, or an average of 120 each day, about one-third of which are industrial classes. The scheme on the next two pages indicates the extent and the division of labor, as well as the apportionment to the College and the Station.

*The departments having been reorganized, and the names in some cases changed, in the summer of 1897, the official title of each old and new professor or department head is given.

FORCE IN VARIOUS DEPARTMENTS, INCLUDING STUDENT ASSISTANTS.	Years of service.....	Proportion of station work..	Number of full-term classes in year..	Postgraduate and special students.....	Laboratory classes	Industrial classes	Rhetoricals, or other weekly classes, year of three terms.	Committees of faculty	Farmers' institutes	Special duties.
EXECUTIVE.										
Geo. T. Fairchild, President...	18	$\frac{10}{15}$	4	.....	.....	.....	4	4	2	Office and supervision.
I. D. Graham, Secretary	18	$\frac{1}{15}$	4	.....	.....	.....	.....	.....	.....	Office.
Grace M. Clark, typewriter	5	.....	.....	.....	.....	.....	.....	.....	.....	Office.
Lorena E. Clemons, clerk	3	.....	.....	.....	.....	.....	.....	.....	.....	Office.
AGRICULTURE.										
C. C. Georgeson, professor.....	7 $\frac{1}{2}$	$\frac{23}{30}$	3	5	.....	4	.....	4	4	Supervision.
F. C. Burtis, assistant.....	6	$\frac{1}{15}$	.....	.....	.....	4	.....	.....	.....	Supervision.
D. H. Otis, assistant.....	5	$\frac{1}{15}$	.....	.....	.....	.....	.....	.....	.....	Office.
Geo. Sexton, foreman.....	1 $\frac{1}{2}$	.....	.....	.....	.....	5	.....	.....	.....	Supervision.
J. G. Haney, student asst.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....
C. B. Ingman, student asst.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....
R. M. Philbrook, student asst..	1	.....	.....	.....	.....	2	.....	.....	.....	.....
HORTICULTURE.										
S. C. Mason, professor.....	9	$\frac{23}{30}$	5	10	.....	4	.....	5	3	Supervision of grounds.
F. C. Sears, assistant.....	.....	$\frac{1}{15}$	.....	.....	.....	2	.....	.....	.....	Supervision.
I. Jones, assistant.....	.....	$\frac{1}{15}$	.....	.....	.....	4	.....	.....	.....	Supervision.
Wm. Baxter, foreman.....	.....	.....	.....	.....	.....	3	.....	.....	.....	Care of greenhouse.
E. Butterfield, student asst.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....
W. L. Hall, student asst.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....
F. H. Meyer, student asst.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....
T. W. Morse, student asst.....	2	.....	.....	.....	.....	2	.....	.....	.....	.....
M. Wheeler, student asst.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....
A. D. Whipple, student asst.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....
BOTANY.										
A. S. Hitchcock, professor.....	5 $\frac{1}{2}$	$\frac{13}{30}$	6	16	2	.....	.....	3	2	Herbarium.
J. B. S. Norton, assistant.....	.....	$\frac{1}{15}$	.....	.....	2	.....	.....	.....	.....	.....
G. L. Clothier, assistant.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
R. H. Pond, student asst.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Miriam Swingle, student asst..	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
ZOOLOGY AND ENTOMOLOGY.										
E. A. Popenoe, professor.....	18	$\frac{3}{10}$	8	10	2	.....	.....	5	3	Museums of zoology and geology.
F. A. Marlatt, assistant.....	8	$\frac{1}{15}$	.....	.....	.....	.....	.....	.....	.....	.....
ANATOMY, PHYSIOLOGY, AND VETERINARY SCIENCE.										
N. S. Mayo, professor.....	6	$\frac{13}{30}$	4	6	.....	.....	.....	3	.....	Counsel for live-stock commission.
CHEMISTRY.										
Geo. H. Failyer, professor.....	19	$\frac{10}{15}$	8	.....	4	.....	.....	5	3	Mineral cabinet.
J. T. Willard, associate.....	13	$\frac{1}{2}$	6	5	3	.....	.....	.....	1	.....
C. M. Breese, assistant.....	10	.....	.....	.....	8	.....	.....	.....	.....	Weather observations.
C. W. Pape, student asst.....	1	.....	.....	.....	2	.....	.....	.....	.....	.....
PHYSICS.										
E. R. Nichols, professor.....	7	.....	8	4	.....	.....	.....	2	.....	Construction of apparatus.
MECHANICS AND ENGINEERING.										
O. P. Hood, professor.....	11	.....	3	2	.....	12	.....	3	1	Supervision of buildings.
W. L. House, foreman wood shops.....	.....	.....	.....	.....	.....	15	.....	.....	.....	Construction.
E. Harrold, foreman iron shops,	3	.....	.....	.....	.....	12	.....	.....	.....	Construction.
C. A. Gundaker, engineer.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
G. L. Christensen, student asst.,	2	.....	.....	.....	.....	4	.....	.....	.....	.....
E. C. Gasser, student asst.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....
H. J. Robison, student asst.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....
MATHEMATICS.										
D. E. Lanz, professor.....	14	.....	12	6	3	.....	.....	4	1	Surveying squads.
Josephine Harper, instructor..	4	.....	14	.....	.....	.....	.....	2	.....	.....
C. M. Buck, student asst.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
G. L. Christensen, student asst.,	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
T. W. Morse, student asst.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
S. R. Vincent, student asst.....	1	.....	.....	.....	3	.....	.....	.....	.....	.....

FORCE IN VARIOUS DEPARTMENTS, INCLUDING STUDENT ASSISTANTS.	Years of service.....	Proportion of station work..	Number of full-term classes in year.....	Postgraduate and special students.....	Laboratory classes	Industrial classes	Rhetoricals, or other weekly classes, year of three terms.	Committees of faculty	Farmers' institutes.....	Special duties.
INDUSTRIAL ART.										
J. D. Walters, professor	20	....	12	....	....	....	....	4	2	Plans for new building.
Phoebe E. Haines, student asst.	4	....	6	....	....	....	....	....	....
C. M. Buck, student asst.....	1	....	6	....	....	....	....	....	....
Maud Gardiner, student asst...	1	....	2	....	....	....	....	....	....
Miriam Swingle, student asst..	1	....	1	....	....	....	....	....	....
ENGLISH LANGUAGE AND LITERATURE.										
O. E. Olin	12	....	12	5	....	....	....	3	1	Public exercise.
Alice Rupp, instructor	4	....	12	....	....	....	....	....	....
Ada Rice, student asst.....	1	....	3	....	....	....	....	....	....
H. N. Whitford, student asst...	1	....	....	....	....	....	18	....	....
HISTORY AND POLITICAL SCIENCE.										
Francis H. White, professor....	9	....	8	4	....	....	6	4	1	Fourth-year rhetoricals.
Eva Gill (geography), student asst.....	1	....	2	....	....	....	....	....	....
ECONOMIC SCIENCE.										
Thomas E. Will, professor.....	3	....	7	8	....	....	12	2	1	Third- and second-year rhetoricals. Taught in absence of professor.
Ivy Harner, student asst.....	....	....	....	....	....	....	....	....	....
HOUSEHOLD ECONOMY AND HYGIENE.										
Mrs. Nellie S. Kedzie, professor.	15	....	3	23	....	12	....	3	4	
Maud Gardiner, student asst...	1	....	....	....	....	4	....	....	....
Ivy Harner, student asst.....	1	....	....	....	....	4	....	....	....
SEWING.										
Mrs. E. E. Winchip, supt.....	13	....	....	....	....	18	....	2	1	
Bertha Winchip, assistant.....	1	....	....	....	....	18	....	....	....
MUSIC.										
A. B. Brown, professor	11	....	....	....	....	18	9	2	....	Music for public exer- cises.
Lorena Helder, student asst...	3	....	....	....	....	18	....	....	....
PRINTING.										
J. S. C. Thompson, supt.....	10½	....	....	....	....	18	....	2	....	The Industrialist.
T. M. Robertson, student asst..	1	....	....	....	....	9	....	....	....
MILITARY TRAINING.										
H. G. Cavanaugh, professor....	3½	....	2	....	4	....	....	2	....	Drill.
LIBRARY.										
Julia R. Pearce, librarian.....	5	....	....	....	....	....	....	1	....	Library from 8 A. M. to 6 P. M.
I. A. Robertson, student asst..	1	....	....	....	....	....	....	....	....

The adjustment of work among the various instructors has been made as nearly equitable as circumstances permitted, and always with full assent of each to his work. In a few instances extra work has been carried, in preference to entrusting it to others. A full complement of class work, in sciences requiring preparation for experiments, is three hours; in other teaching, four hours, but during the last year the large attendance has sometimes increased this to four and five hours, as reports of departments will show. Professors engaged in Station duties largely have, if possible, been exempt from this result

of crowding, but in the departments of chemistry and zoölogy the trespass upon Station work seemed to be temporarily imperative. The regular weekly faculty meeting and committee work have consumed time and energy, especially for the older members of the faculty, who necessarily bear a larger share of responsibility. Work with graduate students, while requiring time and strength, is nevertheless such a means of growth and exhilaration to every earnest teacher as he would not lose, even for the sake of relief. In spite of contrary statements, I cannot refrain from commending the policy of the board that has secured and retained a corps of instructors so efficient for their special work, and so successful in dealing with students like ours, taken from the common schools directly, and yet mature in years. All have shown earnest sympathy with the industrial purpose of the College, and have fitted their teaching to the requirements of such purpose. With rare exceptions, they have been united in execution of the purpose and plans. All are teachers of extensive experience and excellent repute.

A few matters of discipline need mention. Three of the young men suspended for insubordination at the close of the previous year, having presented apology for past wrong-doing and pledges for future good conduct, were allowed to continue studies under suspended sentence, and carried out their pledges successfully. Several other cases of temporary suspension for insubordination or dereliction in duty are on record. All but three of these were settled by action of the students in conformity with the requirements of the faculty. One was suspended during the spring term for neglect of rhetorical work, and two may return at any time upon satisfying the proper authorities of a disposition to meet their obligations as students. Two students, convicted of stealing from fellow-students, were expelled.

The four literary societies furnished a pleasant entertainment on June 6, closing a prosperous year of growth and energetic activity. The annual exhibition of each has been marked by unusual care in preparation, and excellent taste in execution. It is to be regretted that the state legislature did not make the provision asked for reseating the society rooms. Encouragement given to these voluntary associations of students is a strong stimulant to good work.

The range of College athletics has, under the earnest plea of a few students, been extended into allowing several inter-collegiate contests in football and baseball, under the rule that these shall not interfere with regular duties. The result has proved that students occupied as fully as ours cannot well maintain such contests. In no instance has the College baseball club been able to present a strictly student game, and athletics among students have lost rather than gained in

the effort to foster them by such contests. I feel constrained to urge for this last time the importance of putting college sports and physical training upon a basis entirely independent of the excitement and dishonesty of contests between colleges. Systematic training is diminished rather than fostered, while the mass of students are merely entertained without participation. The expenditure of a small amount in gymnasium training for both young men and young women, coupled with the excellent drill of the military department, would greatly benefit the whole body of students. For want of means the gymnasium training has been confined to voluntary classes under direction of advanced students as prescribed by the faculty. These have been sparsely attended, but have been useful to a few students.

The year's work with students closed in the usual exercises of commencement week. The baccalaureate sermon was given, as in past years, by myself, on Sunday afternoon. The class day exercises on Wednesday evening were attended by a large audience of invited guests. The annual address, by Dr. Washington Gladden, of Columbus, Ohio, upon "The True Socialism," took the place of any graduating theses on Thursday morning, and degrees were conferred upon fifty-five candidates for Bachelor of Science, and seven candidates for Master of Science. The honorary degree of Master of Arts was conferred upon Prof. Oscar E. Olin, in recognition of his efficient services in the Chair of English Language and Literature since 1885.

For the degree of Bachelor of Science, each candidate, in addition to completing the course, submitted an original thesis upon a subject selected months before, and elaborated under direction of the professor interested. The master's degree was earned by a distinct and extended course of study under direct oversight of professors, and with approval of the faculty, and the results of original work embodied in a thesis for preservation in the College Library. The following lists record the names and addresses of the candidates for both degrees:

Bachelors' Degree.

Cora Atwell,	Manhattan.
Roger William Bishoff,	Eudora.
Maggie Amelia Correll,	Manhattan.
Mary Frances Carnell,	Bunker Hill.
Williams Burns Chase,	Hoyt.
Frank Edward Cheadle,	Erwin, <i>Oklahoma</i> .
Robert Waitman Clothier,	Vera.
Mabel Crump,	Manhattan.
Fred Volley Dial,	Cleburne.
Viola Grace Dille,	Edgerton.
Samuel Dolby,	Longford.
George Doll,	Larned.
Anna Phillippina Engel,	Manhattan.

Emma Finley,	Manhattan.
Martha Fox,	Manhattan.
Philip Fox,	Manhattan.
Ned Merrill Green,	Manhattan.
Lewellyn Gaines Hepworth,	Burlingame.
Mary Eliza Haulenbeck,	Manhattan.
Ina Emma Holroyd,	Manhattan.
Myrtle Hattie Hood,	Manhattan.
Charles Henry Hoop,	Manhattan.
Winifred Anna Houghton,	Manhattan.
Bret Redmon Hull,	Alta Vista.
Clay Berkey Ingman,	Barnes.
Frederick Hugo Meyer,	Menager.
Gertrude May Lyman,	Manhattan.
Valentine Maelzer,	Neuchatel.
Charles Wesley Shull,	Manhattan.
Alfred Caleb Smith,	Manhattan.
Phoebe Jane Smith,	Manhattan.
Wilhelmina Henrietta Spohr,	Manhattan.
Charles Harrison Stokely,	Burlingame.
John E. Trembly,	Council Grove.
Harriet Agnes Vandivert,	Manhattan.
Olive Voiles,	Manhattan.
John Minton Westgate,	Westgate.
Mark Wheeler,	Bridgeport.
Clare Annie Wilson,	Mapleton.
Sherman Bodwell Newell,	Zeandale.
Olivet Essa Noble,	Riley.
Jesse Baker Norton,	Manhattan.
Mary Augusta Norton,	Manhattan.
Bertha Olivia Olson,	Manhattan.
Hilda Sophia Olson,	Manhattan.
Russell John Peck,	Big Valley, Texas.
William Oscar Peterson,	Randolph.
Eva Louisa Philbrook,	Chepstow.
Rufus M. Philbrook,	Chepstow.
William Joseph Rhoades,	Gardner.
Carl Ephraim Rice,	Manhattan.
Thomas Meade Robertson,	Manhattan.
Homer Joseph Robison,	Yates Center.
Edward Shellenbaum,	Randolph.
Alice Myrtle Shofe,	Manhattan.

Masters' Degree.

Clara Francelia Castle, B. S. '94,	Manhattan.
Grace Maria Clark, B. S. '92,	Manhattan.
Daisy Day, B. S. '94,	Manhattan.
Mary Maud Gardiner, B. S. '93,	Bradford.
Ivy Frances Harner, B. S. '93,	Manhattan.
Daniel Henry Otis, B. S. '92,	Manhattan.
Theodore Wattles Morse, B. S. '95,	Mound City.

The intense interest attending the reorganization of the College called to the annual meeting of the alumni a larger body than usual, and added to the general interest of all the exercises the greetings of these many friends of the College. In this connection it seems proper to speak of the distribution of these sons and daughters of the institution, who must always be its chief support. No better proof of the success of the College is needed than the industrial life of its graduates. The following summary shows that they are widely distributed, but does not show an equally important fact, that they everywhere honor their alma mater by lives of usefulness and influence along the lines of their training.

Kansas, 310; Colorado, 22; Missouri, 22; California, 20; Illinois, 20; Oklahoma, 17; New York, 8; Florida, 6; Washington, 6; Nebraska, 5; Utah, 5; Michigan, Louisiana, Wisconsin, Massachusetts, District of Columbia, Iowa, and Indiana, 4 each; Oregon, Texas, and Indian Territory, 3 each; Pennsylvania, Idaho, Connecticut, Rhode Island, Vermont, Minnesota, North Dakota, South Dakota, and Ohio, 2 each; New Jersey, Virginia, New Mexico, Mississippi, Maryland, Montana, Canada, Egypt, Africa (address unknown), 1 each.

General Work.—With the approval of the board, the course of lectures to farmers given in February for four years previous was discontinued, because of limited attendance from outside the immediate neighborhood. It seems impossible for mature farmers generally to leave their duties for two weeks in midwinter, and the younger generation is better provided for in the regular classes of the winter term of twelve weeks.

The usual provision for farmers' institutes has been made, as during the past sixteen winters. Though the burden has grown with the years, and it is very desirable that fuller provision for such work be made by state appropriation, the comparatively small expense incurred and the limited time given by each professor are well expended. During the past sixteen years some sixty counties of the state have been visited by a delegation of College instructors from one to ten times, and the acquaintance thus formed has been of mutual benefit. The list of appointments for the past year has been as follows:

Russell, Russell county, December 4; Professor Georgeson.

Oneida, Nemaha county, December 10–11; Professors Hitchcock and Willard.

Nortonville, Jefferson county, December 17–18; Professors Olin and Kedzie.

Oak Grange, Shawnee county, December 17–18; Professor Georgeson, Mrs. Winchip.

Hackney, Cowley county, December 29–30; Professors Failyer and Mason.

Hiawatha, Brown county, December 30; Professor Mayo.

Overbrook, Osage county, January 21–22; Professors Mayo and White.

Wellsville, Franklin county, January 22–23; Professors Georgeson and Will.

Peabody, Marion county, January 28–29; Professors Will and Mason.

Berryton, Shawnee county, February 11-12; Professors Graham and Kedzie.
Hutchinson, Reno county, February 4-5; Professors Hitchcock and Nichols.
Haven, Reno county, February 11-12; Professors Lantz and Popenoe.
Stockton, Rooks county, January 4-5; Professor Hood and Mr. Burtis.
Pleasanton, Linn county, January 7-8; Professors Walters and Georgeson.
Newton, Harvey county, February 4-5; Mrs. Kedzie.

Concordia, Cloud county, January 28-29; Professors Graham and Mayo.

Chanute, Neosho county, February 17-18; Professors Mason, Failyer, and Popenoe.

Cherryvale, Montgomery county, February 18-19; Professors Mason, Failyer, and Popenoe.

Lincoln, Lincoln county, April 9; Mrs. Kedzie.

The Experiment Station.—The chairmanship of the Council for the Experiment Station entitles me to speak for the work of the whole. The year has shown good results in many lines of research. Its publications have been widely circulated and well received by those interested. The Secretary has many expressions of high compliment, and individual professors have enjoyed the approval of others in similar work. Since the inauguration of the Station in 1888, sixty-six bulletins have been printed, and eight more are ready for the printer, all but one of which presents results of original observation and are contributions to actual knowledge available for every investigator. A study of the organic law for the Station will show that this original investigation rather than the compilation of information already extant is the object of the appropriation. Nearly all of the limited adverse criticism expressed has been founded upon a misconception of the work or an unfair demand for immediate results. The Station may well challenge comparison of results with those of any other station receiving no aid from the state. I believe that the board should urge the legislature to provide for state printing of bulletins and reports, not only to enlarge the means of the Station, but to insure the quality of the printing of matter so important for preservation.

The organization of the council has proved satisfactory, and the only change in the staff of assistants has been in horticulture, where Mr. F. C. Sears, M. S., after five years of service, was called, in January, to a professorship in the Agricultural College of Utah. Mr. Isaac Jones, B. S., who had successfully conducted the experiments of the season in irrigation, at Oakley, has supplied the vacancy temporarily. Whether the appointment of a distinct head of the Station, who, as director, shall take the place of the council, would be a benefit, is doubtful, so long as the heads of scientific departments of the College can be enlisted in the council. Experience of double-headed organizations of the same employees has generally proved unsatisfactory.

Personal Duties.—The extra burdens of increased attendance fall especially upon the executive offices. A serious illness in January the effects of which remained for months after the two weeks' of confinement to my house, rendered the burden of office work heavier. It would have been too great but for the most efficient assistance of Miss Grace M. Clark, M. S., who has been clerk and typewriter for the past five years.

My teaching has been, as usual, the psychology in the winter term for two divisions of fourth-year class, and logic in the spring term for same class. This involved two hours daily with classes, besides numberless exercises and examinations papers to be inspected. Each of the sixty students in psychology presented at the close of the term's work a thesis upon a topic for study assigned early in the term, and this formed an essential part of the requirement.

Of *ex officio* work outside the College proper, I have done more than the usual amount, from increased requirements of the State Board of Education and the State Board of Irrigation. Addresses have been given before the State Irrigation Convention and the State Teachers' Association. A lecture in the College chapel, and several in gatherings of teachers and others, with an occasional sermon in Manhattan churches, make up all miscellaneous efforts. Illness prevented a share assigned in the farmers' institutes. In November I shared in the annual meeting of the Association of American Agricultural Colleges and Experiment Stations by a brief address before the college section upon "What Should be Taught in our Agricultural Colleges?" At that meeting I was chosen president of the association for the current year, and have prepared the annual address for the next meeting, July 13, at Minneapolis, upon "The Evolution of Agricultural Education."

As managing editor of the *Industrialist*, I have exercised little authority, the apportionment of work among the faculty by its own committee having been sufficient. Most of the local matter and the general selections have been provided for by Supt. Thompson. I have taken my turn with the members of the faculty on the editorial page, and furnished items weekly for the local pages.

Expenditures.—The classification of expenditures at top of next page needs no further explanation than to note that it contains all payments from any fund, including special appropriations under direction of the President.

Growth of Past Years.—The advance of eighteen years is shown in various ways impossible to express in a report. Methods of teaching have taken form, student life has become adjusted to educational

Offices of President and Secretary:			
Postage for all departments	\$257 55		
Stationery	38 54		
Labor, typewriter and clerk	720 00		
			\$1,016 09
Care of buildings:			
Janitor's wages	\$696 69		
Students' wages, and washing	1,122 65		
Fuel, freight and hauling of coal	2,005 33		
Lights, including chemical laboratory uses	106 49		
Implements, soap included	84 73		
			4,015 89
Buildings:			
Repairs	\$1,001 38		
			1,001 38
College:			
Furniture	\$24 31		
Incidentals for all departments, including drayage	495 87		
			520 18
Grounds:			
Improvements	\$131 50		
			131 50
Sundries:			
Regents, per diem and mileage	\$1,495 40		
Regents, hack	47 55		
Care of funds	34 72		
Water-supply	588 75		
Rent of land	233 00		
Advertising	2 00		
American Association of Agricultural Colleges	80 20		
Farmers' institutes	386 56		
Legislative committee's expenses	183 32		
Commencement, lectures, diplomas, etc.	202 53		
			3,254 03
Totals			\$9,928 99

methods, the student's private equipment by preparation and facilities for study has gained, and above all the course of study has been so compacted as to mean nearly double accomplishment. These facts are realized only by those who have felt the conditions at both ends of the period. The material growth itself can be but partially presented in figures, since no estimate can be given of the value in education of the surroundings of our beautiful campus and vine-clad walls. The development of departments is but meagerly presented in any table of values, since the educative value of equipment is far greater, proportionally, in distinct exhibition of its purpose than when commingled with a variety of apparatus without distinct purpose. Some slight indication of this growth is given by the following comparison of inventories and expenditures by separate departments for the year 1880-'81, the first for which full accounts are available, and for the year 1896-'97.

During all these years of growth the general responsibility for all financial matters has rested upon me as secretary of the board of regents. Although I have had the constant assistance of Secretary Graham in the keeping of the books, the system of bookkeeping, with its checks and counter-checks, is of my own devising, and every transaction of land agent, loan commissioner and treasurer has required my indorsement. The 20,000 acres of land has been sold at an average price of about \$8.50 per acre. The investments of endowment have averaged nearly \$55,000 annually, without a flaw in the legality

GROWTH OF DEPARTMENTS.

DEPARTMENTS, 1880-1897.	Inventory.		Disbursements.	
	1881.	1897.	1880-'81.	1896-'97.
Executive.....	\$64,008 58	\$245,218 54	\$5,694 40	\$16,900 90
Farm (Physiology).....	12,171 00	25,778 71	3,878 93	12,924 00
Physiology and Veterinary Science.....		6,549 45		1,983 92
Horticulture (Botany and Zoology).....	3,535 35	21,559 03	2,212 52	7,196 67
Botany.....		14,702 86		3,610 91
Zoology and Entomology.....		10,988 57		3,643 10
Chemistry (Physics).....	2,294 21	10,014 95	1,646 03	4,984 16
Physics.....		4,062 15		1,667 89
Mechanics and Engineering.....	1,146 05	24,335 41	2,076 59	8,638 50
Mathematics (Engineering).....	210 25	1,348 75	1,503 00	2,861 63
Drawing, Industrial Art.....	195 25	2,041 55	667 95	1,912 62
English (History).....	52 50	30 00	1,000 00	2,871 58
History and Political Science.....		124 79		1,666 75
Economic Science.....		10 00		1,601 10
Sewing (Cooking).....	463 55	649 45	630 15	1,322 46
Household Economy.....		787 00		2,399 46
Printing.....	1,331 08	4,374 97	1,539 62	2,237 12
Telegraph.....	382 25		837 62	
Military, etc.....		1,638 95		292 14
Music.....	535 00	3,856 15	155 00	1,608 40
Library.....	3,000 00	37,106 79	143 15	2,542 11
Treasury.....		53 50	1,648 63	967 76
Totals.....	\$89,325 07	\$415,231 57	\$24,455 44	\$84,144 09
Land, acres.....	20,185.64	80.00	440 87	
Loan, endowment.....	\$330,007 55	\$502,344 25	\$380 97	\$310 91

and with but one bad investment, made through misrepresentation by the loan commissioner of the condition of a municipality. The annual expenditures have varied from \$25,000 to \$100,000, without a charge of misappropriation of a cent by any one connected with the Collégé. State officers have invariably commended the accuracy of the College accounts and reports.

The above-described material prosperity of the College has been made possible by the gifts of both the nation and the state, secured, in good measure, at least, through personal efforts and the good repute of the College. In the establishment of the Experiment Station in 1887, and the addition to the income of agricultural colleges in 1890, my personal influence was acknowledged. During the eighteen years of College history prior to 1881, the total of state appropriations for all College purposes, exclusive of regents' expenses and land agents' commissions, is \$157,421.56; the total of the appropriations made in the last seventeen years is \$311,493.98, showing the enlarged interest of the state, as well as increased ability. That these appropriations have been well expended is shown by the fact that although more than \$40,000 of the appropriations will be available only in the next two years, the increase of property at the College is more than \$325,000, nearly \$55,000 more than the state has appropriated during these years.

Of the growth in attendance and efficiency, the experience of 4400 different students can testify. The following table presents such facts as can readily be given in numbers:

STUDENTS AND OFFICERS.

COLLEGE YEAR.	Special.....	First year	Second year	Third year.....	Fourth year	Post-graduate.....	Total.....	Graduated.....	Average age of all students.....	New students.....	Above first year	Counties represented ..	From Riley county.....	From other states.....	Total alumni.....	Officers.....	Student assistants
1878-'79.....		90	89	16	12	2	207	9	18.00						49	13	1
1879-'80.....		167	61	35	11	2	276	7	18.80	150	109	48	77	8	56	13	1
1880-'81.....		184	48	24	9	2	267	8	18.80	147	83	44	77	5	64	13	2
1881-'82.....		232	50	19	11	.....	312	9	19.12	198	80	54	90	13	73	14	3
1882-'83.....		245	60	30	12	.....	347	12	18.80	197	102	50	100	13	85	17	2
1883-'84.....		257	92	26	18	2	395	17	19.10	228	138	55	112	10	102	21	2
1884-'85.....		274	71	36	16	5	402	14	19.60	225	128	61	99	14	116	22	2
1885-'86.....		274	91	35	24	4	428	21	19.00	233	154	60	121	18	137	22	4
1886-'87.....		312	96	44	24	7	485	21	19.40	262	171	66	137	15	158	21	7
1887-'88.....		305	92	46	27	2	472	22	19.30	270	167	67	141	14	180	30	2
1888-'89.....		266	103	41	28	7	445	25	19.50	219	179	55	144	12	205	33	.....
1889-'90.....		307	105	63	28	11	514	27	19.93	261	207	63	174	16	232	28	5
1890-'91.....		343	135	50	53	12	593	52	19.91	280	250	73	192	20	284	31	8
1891-'92.....		336	139	62	37	10	584	35	19.80	260	248	77	176	14	319	35	18
1892-'93.....		339	110	66	43	29	587	39	20.17	271	248	68	198	16	358	40	22
1893-'94.....		275	141	72	42	25	555	40	20.16	198	280	67	215	14	398	41	24
1894-'95.....	5	276	108	89	64	30	572	57	20.57	217	296	66	206	14	455	43	22
1895-'96.....	3	353	121	67	71	32	647	66	20.89	303	294	72	215	17	521	42	25
1896-'97.....	6	388	163	69	62	46	734	55	20.85	346	340	76	272	13	576	41	28

In conclusion, I can but express my gratitude for the interest, judgment and consideration given by more than forty different persons upon the board of regents during my official connection with the College.

Respectfully submitted.

GEO. T. FAIRCHILD, *President.*

COLLEGE, June 30, 1897.

Report of Thos. E. Will,

President, and Professor of Economics and Philosophy.

To the Board of Regents:

GENTLEMEN—With the 1st of July, 1897, I entered regularly upon my duties as president of the College. At this time, however, the work of reorganization, begun at the April meeting of the board, was far advanced. No effort had been spared to find professors and assistants competent to assume the important duties devolving upon such functionaries in an institution of this character. Though the highest attainable standard of qualifications was set, the result has been gratifying. It is believed that the present faculty will compare favorably with that of any similar institution in the country.

Course of Study.—The work of filling the vacant places in the ranks of teachers and assistants had not yet been completed when the scarcely less arduous and important task of revising the course of study was begun. With the belief that an institution such as this,

in a state maintaining simultaneously a university and a normal school, has no well-grounded reason for an independent existence save in so far as it conforms to the organic act of July 2, 1862, and emphasizes those departments of its work relating to "agriculture and the mechanic arts," and seeking to "promote the liberal and practical education of the industrial classes in the several pursuits and professions in life," the attempt was made to revise as rapidly and radically as might be the course of study with the clearly defined and avowed object of making the institution as helpful as possible to the vast classes of society whose livings must be earned and whose social service must be performed by toil. The single course of study was divided through the fourth year into three courses, designated respectively the farmers', mechanics' and women's courses. In the first, substantial addition was made to the amount of work bearing directly upon agriculture. In the second, mechanical and engineering subjects were correspondingly increased in number, at the expense of more general work. The third course corresponded more closely to the old general course which formerly all had taken.

Believing, however, that no education is at the present day "practical" and adequate for the needs of the agricultural and industrial classes which leaves them in ignorance concerning their economic environment and the industrial conditions which largely make or mar their lives and fortunes, the subject of economic science, to which the board of regents had for three years vainly endeavored to give adequate place, was accorded the recognition due its present-day importance. This revised course of study is found in the catalogue for 1896-'97 (pages 32-35).

With the coming of the new professors and the opening of the college year, the work of further revision of the course was taken up and pushed with still greater thoroughness and vigor. The splitting of the course was now carried through the entire four years, and far greater emphasis was laid upon the agricultural and mechanical branches. To the course lately called "Women's" was now given the more accurate name of "General." In this, some increase was made in the amount of purely women's work. Near the end of the year a separate course for women, known as the "Household Economics" course, was provided, in which sewing, cooking and other branches of especial value to women were given prominence. The final result of these various changes was the four courses published in the catalog for the current year.

In addition to the four main courses described should be named, first, the course in architecture, which may be taken by engineers, certain subjects in the engineering course being displaced by subjects of

greater value to students preparing for work in designing, building, and decoration; and, second, the dairy course of one term, designed for private dairymen, and described on pages 46-48 of the current catalogue.

The actual increase in opportunity for work in certain practical lines is shown by the following table:

SUBJECTS.	Classes for which outside study is necessary.		Not requiring preparation outside of class.	
	1895-'96.	1898-'99.	1895-'96.	1898-'99.
Agriculture.....	15	47½	5	15
Horticulture.....	10	21½	5	10
Veterinary science.....	5	13	.....	.....
Mechanics and engineering..	10	54	5	69½
Domestic science.....	17	39½	15	20
Economics.....	5	17	.....	.....

NOTE.—Figures represent class hours per week. Work not requiring outside study is usually industrial or laboratory work. With few exceptions, an industrial is required in each term. In the old course, industrials were usually optional; the same is still true in the general course.

Still further changes are under contemplation, looking toward the enlargement of the opportunities of students in the lines of special work and the carrying of the institution still farther from the general and toward the strictly agricultural, mechanical, and technological, thereby, it is believed, conforming it more closely to the intent of the law, marking out more sharply its place among the educational institutions maintained by the state, and increasing its value to the people by and for whom it exists.

Student Attendance and Good Will.—No feature of the past year has been more encouraging than the attendance, and the feeling on the part of the student body. Considering the attitude of a portion of the press of the state and country, its unremitting and mendacious attacks upon the character and motives of the new management, and the determination of critics to discount in advance all attempts at improvement, it should have occasioned no surprise had the attendance been cut in half. In fact, it not only held its own but greatly increased. As the "Record of Attendance," published on page 27 of the current catalogue shows, the enrollment increased from 734 in 1896-'97—the largest enrollment in the history of the College to that date—to 803. The classes directly served by the College are shown by the following table, taken from the records made out by students at the date of matriculation; it indicates the occupations of the parents of students, the figures showing the number of students reporting in each group:

Farmers, stock-raisers, horticulturists	513	Civil officers.....	12
Mechanics and laborers.....	53	Editors	6
Merchants, clerks, and mercantile agents	59	Boarding-house keepers	10
Physicians	11	Bankers and brokers.....	4
Ministers	11	General business men	10
Teachers.....	13	Miscellaneous	7
Lawyers	11	Not given	27
			<hr/> 746

The attendance by classes was as follows :

COURSES.	1896-'97.				1897-'98.			
	Gentle- men.	Ladies.	Total.	Average age.	Gentle- men.	Ladies.	Total.	Average age.
Postgraduate.....	20	26	46	24.76	33	24	57	26.47
Fourth year.....	35	27	62	22.42	44	38	82	22.63
Third year.....	38	31	69	21.60	49	28	77	20.96
Second year.....	106	57	163	21.65	104	70	174	21.35
First year.....	228	93	321	20.14	216	100	316	21.04
Preparatory.....	59	8	67	22.95	62	15	77	20.70
Special	4	2	6	24.63	8	7	15	20.60
Dairy					6		6	21.05
Apprentices.....					9		9	21.08
Counted twice					10		10	.....
Totals	490	244	734	22.30	521	282	803	21.76

The attendance by counties was as follows :

Counties.	'96-'97.	'97-'98.	Counties.	'96-'97.	'97-'98.
Allen	1	—	Franklin.....	10	15
Anderson	1	2	Geary.....	17	18
Atchison	2	4	Gove.....	1	1
Barton	—	2	Graham.....	2	1
Bourbon	3	2	Grant.....	1	—
Brown	5	9	Greenwood.....	3	6
Butler	2	2	Hamilton	3	1
Chase.....	7	4	Harper.....	2	1
Chautauqua	4	1	Harvey	—	2
Cherokee	2	3	Jackson.....	19	13
Clay	15	13	Jefferson.....	9	11
Cloud.....	2	6	Jewell	6	8
Coffey	10	11	Johnson	12	14
Cowley	5	4	Kingman	1	2
Crawford	1	3	Kiowa	4	1
Decatur.....	—	1	Labette.....	1	1
Dickinson.....	13	20	Lanc.....	—	2
Doniphan.....	5	5	Leavenworth.....	4	7
Douglas	4	5	Lincoln	12	10
Edwards	2	2	Linn.....	1	3
Ellis	3	2	Logan	5	5
Ellsworth.....	3	1	Lyon.....	3	2
Finney.....	3	1	McPherson.....	3	7
Ford.....	2	1	Marion.....	5	8

<i>Counties.</i>	'96-'97.	'97-'98.	<i>Counties.</i>	'96-'97.	'97-'98.
Marshall.....	11	19	Riley.....	272	284
Meade.....	2	1	Rooks.....	—	2
Miami.....	10	10	Rush.....	—	2
Mitchell.....	3	3	Russell.....	2	6
Montgomery.....	—	2	Saline.....	9	3
Morris.....	12	12	Scott.....	2	2
Nemaha.....	7	12	Sedgwick.....	—	5
Neosho.....	1	1	Seward.....	3	4
Norton.....	—	1	Shawnee.....	16	22
Osage.....	14	12	Sheridan.....	2	2
Osborne.....	2	1	Smith.....	4	2
Ottawa.....	5	8	Stafford.....	—	1
Pawnee.....	4	2	Sumner.....	3	2
Phillips.....	9	12	Wabaunsee.....	19	30
Pottawatomie.....	20	22	Washington.....	10	5
Rawlins.....	3	2	Wichita.....	1	—
Reno.....	1	5	Wilson.....	5	5
Republic.....	13	7	Woodson.....	7	5
Rice.....	3	10	Wyandotte.....	3	5

The attendance from states other than Kansas was as follows:

<i>States.</i>	'96-'97.	'97-'98.	<i>States.</i>	'96-'97.	'97-'98.
Arkansas.....	—	2	Missouri.....	8	8
California.....	3	1	Nebraska.....	1	1
Colorado.....	2	2	Ohio.....	1	—
Germany.....	1	—	Oklahoma.....	8	5
Illinois.....	4	4	Pennsylvania.....	—	1
Indian territory.....	3	2	Queensland.....	1	1
Louisiana.....	—	1	Texas.....	2	1
Mexico.....	1	2	Wisconsin.....	—	1
Michigan.....	1	—			

RECAPITULATION.

1896-'97—From seventy-six counties of Kansas.....	698
From thirteen other states.....	36
Total.....	<u>734</u>
1897-'98—From eighty-three counties of Kansas.....	771
From fourteen other states.....	32
Total.....	<u>803</u>

The class graduating at the last commencement was the largest ever sent out, numbering sixty-eight. With few exceptions, which can be easily accounted for, the attitude of the students toward the teachers in the College and the College management has been all that could be desired; and the year which prophets foretold would be stormy proved one of unusual tranquillity and good feeling between students and faculty.

Not the least of the causes, perhaps, of peaceful relations between students and management is the definite establishment of the principle of freedom of speech and publication among students, with the single limitation that such utterance be respectful in matter and terms. The students' weekly publication, the *Herald*, has been recognized as a College institution existing both in fact and by right; and, at the re-

quest of its managers, is published in the College printing-office. In this forum, as well as at board meetings and elsewhere, matters of College interest are freely discussed from the students' point of view.

Soldiers in the Spanish War.—Quite a number of students of the College enlisted in the army during the war with Spain. Besides those who left College during the spring term of 1898 for this purpose, many graduates and old students were officers and men in regiments of this and other states and in the regular army.

Following is a list of students who joined company H, Twenty-second Kansas volunteer infantry. This was composed of students from the three state colleges and two private colleges. It was known as the college company :

Henry M. Thomas, first lieutenant.	Roscoe R. Keeler.
Abner David Whipple, sergeant.	Lot Parker Keeler.
Homer Derr, sergeant.	Ray O. Porter.
Harry Pratt, corporal.	Eugene V. Roe.
Ernest M. Clark.	Lawrence M. Shearer.
Samuel Dolby.	Osborne P. Shearer.
Hakon Hansen.	John Wyse.

The following were students of the College during the spring term of 1898, and either left the College to enter the army or else enlisted at the second call, immediately after commencement:

R. B. Mitchell, sergeant, 22d Kan.	R. B. Peck, 22d Kan.
M. D. Snodgrass, 22d Kan.	G. R. Crawford, 1st lieut., 22d Kan.
H. L. Snodgrass, 22d Kan.	G. E. Martin, corporal, 22d Kan.
Merle Newell, 22d Kan.	W. J. Martin, 22d Kan.
C. D. Montgomery, 21st Kan.	P. F. Fleming, 20th Kan.
W. W. Shoffner, 20th Kan.	H. P. Nielsen, corporal, 22d Kan.
Philip Fox, sergeant, 20th Kan.	R. S. Wood, 21st Kan.
Emery S. Adams, 20th Kan.	Bolivar K. Walters, 22d Kan.
H. W. Yenawine, sergeant, 22d Kan.	Anthony Kolsky, 22d Kan.
L. H. Thomas, 22d Kan.	E. W. Tague, 22d Kan.
R. A. Streeter, 22d Kan.	Albert Krotzer, 22d Kan.

In addition to the foregoing, the following former students of the College were in the army during the war :

George G. Boardman, 21st Kan.	W. K. Blachly, 20th Regulars.
Robert M. Lee, 20th Kan.	Wm. McCord, 20th Kan.
Judd Bridgman, 20th Kan.	Ralph McDowell, 20th Kan.
John Holland, 2d U. S. Engineers.	Frank A. Coe, lieut., — Regulars.
Albert Todd, captain, — Artillery.	Eli A. Helmick, lieut., — Regulars.
James G. Harbord, lieut., — Regulars.	Charles M. Paige, 22d Kan.
N. M. Green, 16th Regulars.	Truman Allen, Hospital Corps.
Douglas Morrison, — Tex.	C. A. Johnson, Hospital Corps.
W. A. Cavanaugh, 2d lieut., 20th Regs.	Mark Wheeler, 2d lieut., 4th Regulars.
Charles S. Evans, — Colo.	I. S. Martin, 7th Cal.
W. H. Painter, 7th Cal.	Ralph Worden, 21st Kan.

Georges Grimes, 20th Regulars.	Homer Robison, 20th Kan.
George McDowell, 22d Kan	W. O. Strahl, 22d Kan.
W. O. Staver, — Regulars.	Sprague Farmin, 22d Kan.
Foster Day, 22d Kan.	Chase Cole, corporal, 20th Kan.
Chas. R. Edwards, sergeant, 21st Kan.	Elmer Hathaway, Hosp. Corps, Regs.
L. C. Criner, first lieutenant, 21st Kan.	George Finley, ———.
Lew Hardy, Hosp. Corps, Regulars.	Robert Garret, — Cal.
F. H. Hunt, 21st Kan.	A. M. Ferguson, corporal, 20th Kan.
Pearl Porter, corporal, 23d Kan.	Albert Porter, 23d Kan.
James Beck, jr., 23d Kan.	Grant Allen, corporal, 20th Regulars.
W. E. Jackson, 20th Kan.	
O. G. Palmer, sergeant, 1st Vol. Cav., Rough Riders.	
Captain McGinnis, 1st Vol. Cav., Rough Riders.	

Inasmuch as enlistments were made at different times and in diverse organizations, and as the men in the second list left College at various dates, no complete record could be made. Any more names of old students who served in the army or navy during this war will be gladly received at the College.

Domestic Science Hall.—The past year has witnessed the completion and occupation of the domestic science hall, erected and equipped with the proceeds of the appropriation of \$16,000 made by the legislature at its last session. This building is regarded as one of the most complete in its appointments and adaptation to its special work to be found. On its first and second floors is conducted the work in cooking, sewing, hygiene, and household economics, while in its basement are the College kitchen and dining-hall.

The dining-hall is an invaluable addition to the equipment of the institution. The remoteness of the College from the town necessitated, in the past, either the practical omission of all afternoon college work or the consumption of cold lunches, to the detriment of student health. With the dining-hall has come a great enlargement of afternoon work, thereby utilizing classrooms and laboratories that formerly have remained practically idle save in the brief morning period.

A further source of gratification in connection with the domestic science hall is that, out of a materially reduced appropriation, the building was, by careful management and close economy, completed and equipped. The dining department is, however, already almost outgrown; and it must remain a source of permanent regret that future as well as existing needs could not have been provided for at one and the same time. Further equipment, moreover, would add materially to the efficiency of the department.

Experiment Station.—With the reorganization of the College came also a partial reorganization of the station staff, and radical changes in several lines of work. The objects sought and the plans of work may be found outlined in a paper by the writer read before the State

Board of Agriculture at its last annual meeting. The results of the work thus far completed are published in the last annual report of the Station, and also in the pamphlet bulletins issued from time to time by members of the council. A representative of the Experiment Station Office at Washington visited the Station last spring, and, after a thorough investigation, pronounced both experimental work and accounts to be in excellent condition.

Cash Value of Experiments.—Few save those who give special attention to the subject realize the pecuniary value of experimental work rightly pursued. Following are a few illustrations:

Experiments at this station last summer showed that simply running a disc harrow over the stubble as soon as the wheat was cut saved in evaporation of moisture an amount of water equal to one and one-half inches of rain. The value of this amount of moisture at that season of the year is enormous.

Experiments at this station with thirty scrub cows showed that the cost of producing a pound of butter fat with the poorest cow was fifteen cents, and with the best seven cents. Taking the entire butter product of the state, the difference between having it produced by cows like our poorest or like our best would amount to three million dollars.

On the station farm for the past nine years, the average yearly production per acre of corn has been sufficient to produce 402 pounds of pork; of Kafir-corn, 454 pounds. The difference is less for the eastern part of the state and much greater for the western part. Kansas corn-fields cover eight million acres. It is probable that one-half this acreage would show as great a difference in favor of Kafir-corn as is shown on our farm; if this be true, the simple substitution of Kafir-corn for corn, without any change in methods of cultivation, would give an increased pork production of over 200 million pounds, worth, at three cents per pound, six million dollars.

The value of even a simple experiment may be great if its teachings are followed out. The College has had an acre in wheat continually for the past eighteen years, without manure or renovating crop, for the purpose of testing the fertility of the land; the average yield per year of this acre has been nineteen bushels; the average yield per acre for the state has been thirteen and seven-tenths bushels. This acre is not so fertile as the average wheat land of the state, but clean seed has been used and the ground has been prepared early. The Kansas acreage of wheat is about 4,500,000 acres; if the yield per acre for the state should become equal to that of the College acre, there would be a yearly increase of 23,850,000 bushels of wheat, which, at fifty cents per bushel, would furnish the \$15,000 yearly allowance

made by the government to the Kansas Experiment Station for 795 years; or, if it is not considered desirable to increase the quantity of wheat grown in the state, with the yield of the College acre as an average yield for the state, 1,250,000 acres less wheat would be required, and this acreage could be devoted to some other crop or used for pasturage.

The work of the Kansas station might be greatly enlarged, and its value correspondingly enhanced, by additions to its available funds. Much of its annual appropriation is expended in the publication of its bulletins, \$1249.07 having been spent in 1896-'97, \$1776 in 1897-'98, making a total of \$3025.07 for this purpose. The taxpayers of the nation furnish this \$15,000 annual fund. Yet the resulting benefits inure primarily to Kansans. If the state were willing to publish the bulletins, as it now publishes catalogs, biennial reports, geological reports, and other documents, the above sums might be applied directly to the work of experimentation. It is hoped that the legislature, at its next session, may see fit to make provision for such publication, and the consequent enlargement of station work.

Farmers' Institutes.—During the winter of 1897-'98 the College was represented at farmers' institutes, as follows:

Concordia—Faville, Nichols, Otis.	Overbrook—Burtis, Graham.
Newton—Bemis, Harper.	Chanute—Harper, Hitchcock.
Oak Grange—Cottrell, Graham.	Hiawatha—Faville.
Eureka—Cottrell, Faville.	Berryton—Burtis, Fischer.
Russell—Bemis, Cottrell.	Washington—Faville, Nichols.
Indian Creek—Cottrell, Pearce.	Scott—Faville, Fischer.
Lincoln—Cottrell, Olin.	Meriden—Cottrell, Walters.
Bendena—Cottrell, Walters.	Lakin—Graham.
Horton—Cottrell.	Valley Falls—Cottrell, Walters.
Hackney—Clothier, Otis.	McLouth—Cottrell, Walters.
Madison—Cottrell, Hood.	Delphos—Otis, Weida.
Independence—Burtis, Walters.	Gardner—Faville, Fischer.
Hutchinson—Will, Willard.	Haven—Campbell.
Manhattan—Cottrell.	Seneca—Burtis, Clothier.
Peabody—Cottrell, Winston.	Atwood—Cottrell.

The following statement, prepared by the professor of agriculture and chairman of the committee of the faculty on farmers' institutes, I insert at this point, with my earnest personal indorsement and the hope that the need herein set forth may be adequately met:

Kansas is behind in her farmers' institute work. The state makes no provision for institutes, and the work has been left to be carried on and be paid for by this College, whose funds are insufficient for the needs of the regular college work, and whose entire force is needed for teaching. In 1897-'98, \$500 was appropriated from the College funds for institutes, a larger amount than had ever before been expended for this purpose, and thirty institutes were held; one institute for each three and a half counties in the state. Three railroads, the Santa Fe,

the Rock Island, and the Union Pacific, granted the College half-fare rates for members of the faculty traveling on institute work when the institute was held on the line giving the reduced rate. But for this courtesy the College could not have held over twenty institutes with the money available. Compare this record with the work of other states. Wisconsin appropriates \$12,000 for farmers' institutes, Minnesota \$13,500, Pennsylvania \$15,000, and New York \$15,000. In Ohio the institutes are supported by a county tax, the sum not to exceed \$200 for each county. The Ohio plan applied to Kansas would give an institute fund for the state of \$21,000, as compared with the \$500 now spent. The latest reports at hand show the following number of farmers' institutes held during the year in the states named: Kansas, 30; Indiana, 185; Ohio, 284; New York, 300.

A few facts brought out in our institutes held during the past winter will show the need and advantages of the work:

In one of our western counties the wheat yield was good in 1892 and in 1897, with almost total failures in the intervening years. In this county there is one settlement where farmers have had fair crops every year, due to the methods of preparing the ground before seeding.

The "Potato King of the United States" grows the potato crops which give him his title in a section of Kansas where, a few years ago, potatoes were not grown in sufficient quantities to supply home consumption, because farmers had failed to get them to grow.

Alfalfa is essential for the cheapest production, under Kansas conditions, of beef, milk, and pork. It is generally thought that alfalfa cannot be grown successfully except on the bottom lands, and therefore upland farmers lose all the profits to be obtained from growing and feeding it. A farmer in south-central Kansas has 100 acres in alfalfa on the highest land in the county and raises good crops every year; while a farmer in the "arid hills" of southern Nebraska raises 6000 tons of alfalfa hay on 2000 acres of land without irrigation; and at the Rain-belt Experiment Station, on the east line of Colorado, an excellent stand was grown on a high ridge 290 feet from water.

Kafir-corn grain is nearly equal to Indian corn for producing beef, milk, and pork. In the severe drought of 1897, in localities where Indian corn yielded only one to five bushels per acre, Kafir-corn gave twenty-five bushels per acre; and on uplands in eastern Kansas during the past ten years Kafir-corn has averaged about one-third more grain per acre than Indian corn. Yet thousands of farmers in that part of the state where rainfall is usually deficient continue to plant corn, as do their neighbors on the upland farms in the eastern section of the state.

In one county alone, the past winter, two million dollars was invested in feeding steers—a large part of this amount by men new in the business, whose methods were pronounced by experienced feeders to be sure to bring loss, or at least no profit. These new feeders could have held farmers' institutes in every township in that county for \$500, and with this amount could have engaged the most successful feeders of the state to teach them the best methods of feeding. Single feeders in this county lost one to five times this amount by mistakes which others could have told them how to avoid.

Reports received last winter indicate that patrons of creameries were receiving on an average twenty dollars per cow per year for milk. At one creamery the patron received forty-five dollars for the milk of each cow during the year, while another patron received only twelve dollars—a difference of 275 per cent. At another creamery a patron sold his milk for forty-eight dollars per cow, and

his calves brought him an average of eighteen dollars each—an income of sixty-six dollars per cow.

What would it be worth if farmers' institutes could be held in every county of the state, at which these successful producers of crops and of meat and dairy products could teach others their methods which produce results far above those obtained by ordinary means?

The cost of holding such institutes is paltry when we consider what a slight increase in yields means. If one dollar could be added to the profits obtained from each cow it would mean over half a million dollars yearly increase for the state; one cent added to the value of each animal slaughtered or sold for slaughter in the state would add nearly \$40,000; one-tenth of a cent saved on the cost of producing each bushel of corn would mean a saving of \$150,000.

Kansas farmers are in competition with the farmers of the world. Other states have the benefits that come from farmers' institutes, and Kansas farmers must have help in the same direction, or they will fall behind in the race. The College force has neither the funds nor the time to conduct the number of institutes that should be held in the state. At least three should be held in each county, making over 300 in all. A thoroughly competent man should be appointed as director of institutes, who should be a member of the College faculty, with work confined to conducting institutes and preparing for them. Such a connection would give all institutes the benefit of our experimental work. During the summer this director could familiarize himself with our experiments, and prepare to put the results in the best form for presentation at institutes. Successful men in all branches of Kansas farming should be employed during the winter to work with the director, giving their experiences to the institutes; and the College force would go whenever other duties permitted.

Aid to Needy Students.—The special classes for whose benefit an agricultural and mechanical college is designed being peculiarly those of moderate or inadequate means, it is inevitable that the question of student necessity should constantly be brought home to one in charge of an institution such as this. No portion of my duties is so painful as the receipt of letters from earnest and ambitious youth, eager for opportunity for study but destitute of means. The inevitable corollary of a free public-school and college system is public aid for students of this character. This, so far as opportunity permits, the College seeks to extend in a manner consistent with the maintenance of student self-respect, and in the following ways:

1. Employment is furnished students by the College at the uniform rate of ten cents per hour. The student pay-roll for the past year, though blended with an employees' pay-roll for part of the year, and, therefore, not readily obtainable in exact figures, amounted to, probably, \$6000 during the College session, from September to June, in addition to what students earned during the summer vacation, working, then, as regular employees, on full time. While, because of the brevity of his daily work period and his frequent lack of skill, the labor of the student is commonly regarded as more expensive than labor employed on the purely commercial basis, the value of this assistance to students is regarded as sufficiently great to warrant the increased outlay occa-

sioned the College by such employment. The ground given for insistence upon a uniform rate of compensation, regardless of the degrees of skill, has been that cost of living at the College was practically uniform for skilled and unskilled alike, and that the object of maintaining a student-labor system was not that either student or College might make money thereby, but that as many worthy students as possible might be enabled to pay their way through college.

2. Plain meals are furnished at the College dining-hall at cost, at from eight and one-third to ten cents each, or \$1.75 per week.

3. The College has established a bookstore, at which students' books and supplies are furnished at cost. The annual saving to the student body from this source alone is estimated at \$1500.

It is earnestly hoped that, in addition to these measures, a students' dormitory may be provided, at which rooms may be furnished at cost also.

The Industrialist.—By your authorization a change has been made in the form and frequency of appearance of the College publication, the *Industrialist*. Hitherto, save on special occasions, a small weekly folio, it is now published as a monthly magazine, appearing ten times a year; and is still, as formerly, edited by the faculty and published by the College printing department. The *Students' Herald*, being a weekly paper, now supersedes in large measure the old *Industrialist* as a college newspaper, and leaves the field free for the publication by the *Industrialist* of agricultural, scientific and historical matter of more permanent importance. This matter is furnished by members of the College community, generally professors and assistants; half the faculty, since the change to the monthly form, assuming responsibility for each alternate number, though serial articles are welcomed. During the past year matter has been furnished as follows.

Industrialist contributors for year ending July, 1898, with approximate number of words credited to each:

Bemis, E. W.	15,000	McAfee, C. B.	6,500
Brown, A. B.	1,200	Metcalf, F. A.	5,000
Breese, C. M.	4,600	Nichols, E. R.	6,200
Burtis, F. C.	5,000	Norton, J. B. S.	600
Campbell, Helen.	10,800	Olin, O. E.	2,000
Clippings.	20,000	Otis, D. H.	9,200
Clothier, G. L.	7,100	Parrott, P. J.	2,000
Cottrell, H. M.	8,600	Parsons, Frank.	30,000
Davis, Chas. S.	6,000	Pearce, Julia R.	1,000
Faville, E. E.	6,500	Roberts, H. F.	500
Fischer, Paul.	5,000	Rogier, Henry.	800
Graham, I. D.	4,600	Rupp, Alice.	2,800
Hall, W. L.	1,900	Stewart, A. A.	3,700
Harrison, Ralph.	1,700	Unsigned articles.	70,000
Herron, Geo. D.	11,000	Walters, J. D.	16,000
Hitchcock, A. S.	8,500	Weida, G. F.	9,800
Hood, O. P.	6,300	Will, Thos. E.	80,000
Howell, Harriet.	1,500	Willard, J. T.	6,000
Law, Dr. James.	4,800	Winston, Mary F.	2,600
Lee, W. C.	2,900		
Local notes, J. D. Walters, editor.	60,000		
		Total.	447,700

That the change in the form and character of the *Industrialist* is

appreciated, is attested by numerous letters and words of commendation.

College Health.—During the fall of 1897 the city of Manhattan was visited by an epidemic generally supposed to be typhoid fever. On advising with a committee of the faculty, your secretary requested the health officer of Manhattan to request immediately an investigation by the state board of health of the causes of the fever. No action, however, was taken by the officer or other authorities of Manhattan. The state board of health, becoming aware some weeks later of the epidemic, visited the city and the College, made a careful investigation, collected data, and published their findings and recommendations in a report dated April, 1898. Of those who died of the fever, one was a college student; another student died in February of pneumonia.

The attempt has been made by some to trace a connection between the epidemic of fever and the discharge of the College sewage into the Blue river through a sparsely occupied portion of the corporate limits of Manhattan, most of the matter, however, disappearing into the earth shortly after leaving the College grounds. Of this the state board of health in their report (page 8) say:

*There certainly can be no grounds for suspicion that the health of the students can be affected by the sewage. Nor is there at the present time probability that the citizens of Manhattan have been subjected to detrimental influences from the sewage to any material degree. Nevertheless the system is one that cannot long be tolerated by the city. . . . At its exit from the grounds, in the warmer season of the year, the sewage is very offensive. . . . This much is true, however, that for some distance, be it long or short, the College sewage is incontestably a nuisance in the city of Manhattan, and as such could certainly be enjoined by any citizen affected. That no one can commit a nuisance affecting the health or value of property of any citizen has often been affirmed by the courts. The College is, then, I believe, liable at any time to be prohibited from its present discharge, and it would seem to be the part of wisdom to take steps for the speedy remedying of the evil.

While, therefore, it seems idle to charge the fever in Manhattan in 1897 to the College sewage, it must be conceded that the present plan for the disposition of the sewage is unsatisfactory, and should be improved. From the proceeds of the mill tax elsewhere requested, should this be granted, it is proposed to meet this need.

General.—The condition of the four College literary societies is highly satisfactory. Each gave its annual exhibition in the College chapel with credit to all concerned. The establishment of the department of oratory has redounded greatly to the advantage of work of this character. The annual address in commencement week, provided by the societies, was given this year by Prof. C. B. McAfee, of Park

College, Missouri. The societies are still in want of furniture, the need for which was presented in the last biennial report.

Two clubs for students and others interested have been established in the past year: the Utopian club, organized for the discussion of live topics of various sorts; and the Farmers' club, carried on principally by students and teachers in the agricultural department. The Farmers' club is at once an evidence and a promoter of the renewed interest in agricultural subjects so manifest in the College.

The chapel lectures on economic and sociological topics, which during the year of 1895-'96 were superseded by the old system of lectures by all members of the faculty in rotation, were reestablished in 1896-'97; five being given in the fall term by Professor Bemis and five in the winter by Professor Parsons. Following are the subjects treated:

By Professor Bemis:

1. Strikes and injunctions.
2. Cooperation.
3. Labor legislation.
4. The modern city.
5. State and local taxation.

By Professor Parsons:

1. Government by and for the people.
2. Partizanship and corruption.
3. Administrative abuses.
4. Some leading reforms in government.
5. Manhood and mutualism.

Such Saturday afternoons in the fall and winter terms as were not occupied by the above lectures, and all Saturday afternoons in the spring terms (Saturdays on which examinations occurred being omitted), were occupied by declamations and orations by third-year students.

The exercises of commencement week were unusually satisfactory, not only on account of the perfect weather and the size of the class, but of the remarkable oration delivered by Prof. George D. Herron. The address, entitled "The Social System and the Christian Conscience," was the event of the week, and may be found, together with other commencement proceedings, in the commencement number of the *Industrialist*. The single unpleasant feature of commencement week, a feature now inseparable from all college occasions of general interest, was the utterly inadequate size of the College chapel. Many are turned away from all such exercises, and many more, knowing the situation, remain away. It is hoped that means may be found either to enlarge the present chapel or to construct a new one.

The following are the names of those upon whom was conferred the degree of bachelor of science :

Emory Sherwood Adams,	Manhattan, Riley.
Joshua William Adams,	Marvin, Phillips.
Samuel John Adams,	Marvin, Phillips.
Thomas Walter Allison,	Florence, Marion.
William Anderson,	Cleburne (Pottawatomie.)
Jessie Geneva Bayless,	Yates Center, Woodson.
Hope Brady,	Manhattan, Riley.
Robert Henry Brown,	Manhattan, Riley.
Earl Carver Butterfield,	Hull, Marshall.
John Alfred Conover,	Sabetha, Nemaha.
Minnie Laura Copeland,	Quenemo, Osage.
Lucy Maria Cottrell,	Wabaunsee, Wabaunsee.
Anna Magdalena Dahl,	Webber, Jewell.
Inga Josephine Dahl,	Webber, Jewell.
Cassie Belle Dille,	Edgerton, Johnson.
Emma Phillipine Doll,	Larned, Pawnee.
Cora Elizabeth Ewalt,	Manhattan, Riley.
Guy Francis Farley,	Melvorn, Osage.
Mary Finley,	Randolph, Riley.
Arthur Lorenzo Frowe,	Louisville, Pottawatomie.
William Logan Hall,	Anthony, Harper.
Anna Viola Hanson,	Manhattan, Riley.
James Madison Harvey,	Junction City (Riley.)
Emmett Vivian Hoffman,	Enterprise, Dickinson.
Guy Dudley Hulett,	Edgerton, Johnson.
Bertha Emma Ingman,	Barnes, Washington.
Ary Cordelia Johnson,	Success, Russell.
Charles Percy King,	Ogamaw, <i>Arkansas</i> .
Bessie May Lock,	Manhattan, Riley.
Olive Ann Long,	Manhattan, Riley.
William Andrew McCullough,	Delavan, Morris.
Inez Isadore Manchester,	Chiles, Miami.
Florence Adelia Martin,	Junction City (Riley.)
Henry Alba Martin,	Junction City (Riley.)
Alice Maude Melton,	Manhattan, Riley.
George Gerkein Menke,	Garden City, Finney.
Mary Frances Minis,	Manhattan, Riley.
May Moore,	Manhattan, Riley.
Harriet Grace Nichols,	Liberal, Seward.
Schuyler Nichols,	Liberal, Seward.
Lucy Junie Parks,	Manhattan, Riley.
Ernest Byron Patten,	Silver Lake, Shawnee.
Clara Jeanette Perry,	Manhattan, Riley.
Emilie Matilda Pfuetze,	Manhattan, Riley.
John Martin Pierce,	Genoa, <i>Illinois</i> .
Raymond Haines Pond,	Topeka, Shawnee.
William Poole,	Briggs, Geary.
Willis Thomas Pope,	Lincolnvill, Marion.
Nora May Reed,	Genoa, <i>Illinois</i> .
Gertrude Elizabeth Rhodes,	Manhattan, Riley.

Henry William Rogler,	Matfield Green, Chase.
Ferdinand John Rumold,	Dillon, Dickinson.
Martin Wilbur Sanderson,	Reedville, Marshall.
Olive Maria Shelden,	Manhattan, Riley.
Edwin Lee Smith,	Manhattan, Riley.
Oliver Russell Smith,	Manhattan, Riley.
Bertha Julia Spohr,	Manhattan, Riley.
Andrew B. Symns,	Brenner, Doniphan.
Cora Gertrude Thackrey,	Manhattan, Riley.
Harriet Emerson Thackrey,	Manhattan, Riley.
Henry Marsden Thomas,	Melvern, Osage.
Elsie Lucile Waters,	Manhattan, Riley.
Fred Dorsey Waters,	Manhattan, Riley.
Abner Davis Whipple,	Olivet, Osage.
Adelaide Frances Wilder,	Manhattan, Riley.
Josephine Hannah Wilder,	Manhattan, Riley.
Frank Yeoman,	La Crosse, Rush.
Frederick Zimmerman,	Moray, Doniphan.

The second degree, master of science, was conferred, after a course of two years in College, or three years by correspondence, upon the following graduates, they being commended for special proficiency in the branches indicated after their respective names:

1898.

Con Morrison Buck, '96, Oskaloosa, Jefferson,	Architecture and Designing, Physics.
Florence Ruth Corbett, '95, Manhattan, Riley,	Household Economics, Botany, Designing.
William Henry Moore, '94, Manhattan, Riley,	Horticulture, Botany, Entomology.
Charles Wesley Pape, '95, Manhattan, Riley,	Zoology, Drawing, Geology.
Herbert F. Roberts, '91, (K. U.) Manhattan, Riley,	Botany, Horticulture, Chemistry.
George E. Rose, (K. U.) Kansas City, Wyandotte,	Horticulture, Entomology.
Mrs. Ava Hamill Tillotson, '92, Hill City, Graham,	Household Economics, Zoology.
Charles Henry Thompson, '93, Columbia, Mo.,	Botany, Horticulture.
Samuel Robert Vincent, '94, Orie, Okla.,	Physics, Engineering.

Personal Duties.—Within the past year I have taught classes as follows:

Term.	Subject.	Ladies.	Gentle- men.	Total.	No. of divisi'ns.
Fall	Economics (third year)	20	46	66	1
Fall	German, beginning	9	24	33	1
Winter	German, beginning	12	7	19	1
Spring	German, beginning	4	2	6	1
Spring	Finance (fourth-year class, sec- ond half term)		31	31	1

In answer to the question why the executive head of an institution of considerable size should teach at all, it may be replied that one administering educational affairs should, in so far and as long as possible, keep in touch with educational work, preserve an interest in practical pedagogics, retain the scientific spirit, and appreciate the difficulties with which teachers and students contend. In no way can this end be gained save by actual participation, in some measure, in the work of instruction; and in few ways can it be more certainly and completely missed than by the executive permitting himself to become entirely swallowed up in the vortex of college business, administrative detail and routine.

The growth in the amount of executive duties and responsibilities occasioned by the growth of the institution and the many changes in the faculty and assistants, in course of study, in policy and methods, has been remarkable. In this work I have been assisted by my valued private secretary, Mr. Wm. C. Lee, and by Secretary Graham, with his office force. In the midst of added duties, the need for promptness and vigor in administration has constantly been kept in view. Labor-saving devices and methods, including desk telephone, stenographic service, and careful division of labor, have therefore been introduced where possible. Nevertheless office duties constantly encroach upon and almost entirely forbid direct supervision of the educational and industrial aspects of college work and the actual operations of the Experiment Station.

Not the least of my duties has been the oversight of the *Industrialist*. As managing editor, I have been practically responsible for the supply and condition of all copy, the correctness of proofs, and the prompt appearance of the publication. Sources of embarrassment in the printing department have increased the burden, especially of the last-named duty.

Frequent calls have come for work outside the College, among these being requests for lectures and papers before teachers' associations, high-school graduating classes, farmers' institutes, and the meeting of the state board of agriculture. Duties as a member of the state board of education, including attendance upon meetings, preparation of examination questions, and the reading of examination papers, have also required some time. In the performance of many of the above duties I have been aided by the faculty and its committees. Special mention should be accorded to Professor Walters, who, as senior member of the faculty, local editor of the *Industrialist*, and chairman of important committees, has rendered invaluable service.

In the twelve months covered by this report, I have taken some two weeks of vacation, the time thus consumed being occupied in attendance upon the meeting of the American Association of Agricultural

Colleges and Experiment Stations, visits to educational institutions, and the necessary travel.

Preparatory and Other Teaching.—In addition to the above, the following teaching was done under the direction of the executive department:

Advanced German class, taught by Mr. H. F. Roberts. In the fall term there were: Gentlemen, 7; ladies, 2; total, 9. The class continued through the winter and spring terms, but the number in attendance is not reported.

The class in preparatory geography was taught in the fall and winter terms by Mr. Philip Fox. The students numbered as follows: Fall term—gentlemen, 14; ladies, 8; total, 22. Winter term—gentlemen, 18; ladies, 1; total, 19.

Preparatory classes in history, grammar and arithmetic will be found reported in the departments of history, English, and mathematics.

Expenditures.—The expenditures of the executive department for the past year are as follows:

Offices of President and Secretary:

Postage for all departments.....	\$586 89	
Stationery.....	95 85	
Labor, typewriters and clerks.....	1,734 54	
Total.....		\$2,417 28

Care of Buildings:

Janitor's wages.....	\$600 00	
Students' wages.....	832 57	
Fuel, freight, and hauling of coal.....	1,973 52	
Lights.....	55 48	
Washing of towels, etc.....	123 36	
Implements, soap, etc.....	73 75	
Total.....		3,658 68

Buildings:

Improvements.....	\$300 00	
Repairs.....	1,325 59	
Total.....		1,625 59

College:

Furniture.....	\$290 82	
Incidentals for all departments, including drayage...	605 52	
Total.....		896 34

Grounds:

Improvements.....		106 70
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Sundries:

Advertising.....	\$159 35	
Rent.....	868 00	
American Association of Agricultural Colleges.....	90 38	
Water-supply.....	630 84	
Farmers' institutes.....	489 94	
Regents, per diem and mileage, and hack.....	1,228 75	
Catalogues.....	10 40	
Commencement.....	114 85	
Total.....		3,592 51

Grand total..... \$12,297 10

Trusting the above report may be found satisfactory to all interested in the College, it is hereby respectfully submitted.

THOMAS ELMER WILL, *President.*

Report of I. D. Graham,

Secretary, Professor of Bookkeeping, Commercial Law and Accounts.

No report by Secretary Graham (retired August 31, 1898) having been found, the following tables have been prepared in the secretary's office at the College. The following classes were taught by Secretary Graham :

CLASSES.	1896-'97.			1897-'98.		
	Gentlemen.	Ladies.	Total.	Gentlemen.	Ladies.	Total.
Fall term	58	26	84	49	27	76
Winter term	198	86	284	125	73	198
Spring term	20	6	26			
Totals	276	118	394	174	100	274

The enrollment in bookkeeping classes taught by R. S. Kellogg during the winter and spring terms of 1897-'98 was as follows :

CLASSES.	Gentlemen.	Ladies.	Total.
Winter term	51	23	74
Spring term	13	7	20
Totals	64	30	94

In addition to the work indicated above, Mr. Graham performed the work of secretary and bookkeeper of the College and secretary of the Experiment Station council.

DEPARTMENT OF AGRICULTURE.

Report of C. C. Georgeson,

Professor of Agriculture.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of the farm department for the year ending June 30, 1897 :

Classroom Work.—In the fall term of 1896 I gave instruction to twenty-nine of the young men of the fourth-year class in the following subjects: Principles of stock-feeding, principles of stock-breeding, farm crops, and barn plans and outbuildings. Instruction was given in the first two subjects by lectures exclusively, supplemented by reference reading and practice in compounding rations and tracing and

writing out pedigrees. For the last two subjects text-books were used with reference reading. I also gave a brief course of lectures on farm experiments in general and experiments at this station in particular.

During the winter term I gave instruction to eighty-six young men, mostly of the second-year class, and partly first years, in the subjects of (1) the history of agriculture, comprising a sketch of the development of the art from the earliest times, and the value of scientific research in agricultural lines during the last half century. This subject was taught by lectures. (2) The history and description of the various breeds of cattle, horses, sheep, and swine. This is a large subject, and a text-book was used, in the hope of facilitating the work, but it had to be supplemented by lectures on many points not covered by the book. These classes made satisfactory advancement, and there were less than the usual number of failures at the final examination.

The second-year class continued the study of live stock during the industrial hours of the spring term by practice in judging the cattle in the College herd and comparing the individuals in each breed with the scale of points adopted for that breed.

During my absence at farmers' institutes, which occurred at frequent intervals all through the winter, the classes were in charge of Assistant Burtis. These enforced absences are a serious detriment to the classes, inasmuch as they break in on the continuity of the work, and curtail the already far too limited time for study in agriculture. The work in all these lines was as thorough and comprehensive as the limited time would permit, but the time has been wholly inadequate to treat the subject *in extenso*.

In the extended course, I had seven students in dairying in the spring term. Four of them found, however, that the required course already in hand was as much as they could manage, and they, therefore, dropped it after having attended several weeks.

The Herd.—I call special attention to the condition of the herd at this time. On my recommendation of last year, the Board authorized the testing of the entire herd with tuberculin, in order to ascertain which animals, if any, were affected with tuberculosis. This test was undertaken by Doctor Mayo last winter, and I presume he will render you a detailed report on that subject. I shall, therefore, only call your attention to the fact that about thirty-four per cent. of the number of the animals in the herd gave the reaction for tuberculosis on the application of the test. Of the entire number which reacted, there were only two, a Shorthorn cow and a Jersey cow, which showed any signs of the disease whatever by a physical examination, and these two were destroyed. All the others, although they gave the charac-

teristic rise in temperature, showed no outward signs of being diseased in any way. They are as active, eat as well and look as well as the animals which did not react to the test. There is, nevertheless, scarcely a doubt but that they are tainted with tuberculosis. The test has been tried and verified so frequently that there can be no question as to its reliability. The affected animals were mostly aged Shorthorn cows. All the young Shorthorns proved to be sound. Even the calves of cows which reacted proved to be perfectly sound, and the Shorthorn stock bull, Golden Knight, was also found to be sound. On the other hand, all the Aberdeen-Angus cattle, except a young bull calf, reacted to the test; and the Holstein stock bull also reacted, but none of the Holstein cows or young stock of that breed reacted to the test. Of the Jerseys, the two oldest cows proved to be affected, but the bull, two young cows and the several head of young stock of that breed were sound. Of the Herefords, one cow proved to be affected.

All the affected animals were at once placed in the north barn, while the sound ones were stabled in the south barn, and communication between the two herds prohibited. When we came to turn them on pasture, all the affected females were put in the Williston pasture and the sound ones partly in the pasture of the old farm and partly in the pasture for the dairy cows west of the College. The two affected bulls were kept at the barn in special stalls, and special measures were taken to prevent the spread of the contagion through them.

The result of this test is of vital importance, inasmuch as it shows that there may be more of this disease among the cattle of the state than is generally supposed. I know of no reason why the College herd should be especially subject to it. As already stated, with the exception of two cows, none of the affected animals gave the slightest outward signs of being tuberculous, and if the disease may be present in thus apparently sound animals, it may be wisest for the breeders of the state to take steps to ascertain if their herds are affected, in order to restrict the spread of the disease, should it be found elsewhere.

There are two ways to dispose of the diseased animals in the College herd: one is to kill them and bury them; the other is to keep them strictly isolated and experiment with them. Valuable facts, first, as regards the transmission of the disease to their offspring, and secondly, as regards the dissemination of this disease by contact with sound animals, can be brought to light in this way, and in this way only. Of course it is out of the question to sell them to the butcher, and no breeder would have the hardihood to purchase them. In my judgment these cattle should be kept and used for experiment. It is highly desirable to know how far it is wise and safe to use affected cows for breeding. Little is known on the subject at present. Breeders cannot afford to experiment in that line, but the Agricul-

tural College can afford it, and ought to do so, in the interests of the cattle industry of the entire state. I therefore recommend that provisions be made for the complete isolation of the affected herd and that they be bred as heretofore, the calves being tested with tuberculin at birth to ascertain if the disease is congenital, and again at stated intervals thereafter. It opens the field for a series of experiments of the highest practical value, which it seems to me the institution cannot afford to ignore.

The Shorthorn bull, Golden Knight, is still at the head of the herd. I recommended that he be sold or exchanged for an equally good bull more than a year ago, and I have urged the same question at every meeting of the board since that time. He should be disposed of because some of his own heifers are now old enough to breed, and if another bull is not procured the manager of the herd will have to choose between the alternatives of either letting them go barren, or breeding them to their sire, and either course is undesirable. Golden Knight is half brother to some of the younger cows in the herd. In common with these females, he is sired by the famous imported Craven Knight. He was bred by Senator Harris, of Linwood, while Craven Knight was at the head of the Linwood herd. In due course Craven Knight was secured for the College herd, and his offspring here proved to be of such excellence that I retained several of his daughters in the herd. When it became time to breed these heifers I was authorized to select Golden Knight, their half brother, to head the herd. The selection was the result of a careful consideration of the points involved. It is a well-known fact that the breeding together in half brother and sister have produced some of the most famous animals in the records of stock-breeding. I was anxious to concentrate the Craven Knight blood in the herd, and this afforded an opportunity to do it. The results have proved the wisdom of the choice. The offspring by these half sisters are the finest ever reared on the College farm, and not a single one of them was tainted with tuberculosis. I am thus particular in explaining this point, in order that the Board may understand the situation fully.

I call special attention to the foundation which has been laid for an excellent herd of Jerseys. It consists now of the bull Stoke Pogis Marigold (41095), and five young females, all of them superior individuals. The bull is sired by Stoke Pogis of Prospect (29121), the only son of the champion cow of the World's Fair, Ida Marigold (32615); and the dam of the bull is Lady Grace of Upholme (39569), a cow that has made 25 pounds 6.5 ounces butter in seven days. He is a superior individual of the ideal dairy form and color, large and thrifty, weighing now, at the age of two and one-half years, over 1400

pounds. He will undoubtedly prove himself a great sire. I have had inquiries from Jersey breeders in various parts of the country who wanted to know if the College would dispose of him.

It has been my aim for years to increase the Jersey herd by retaining the females of our own breeding, but by some perversity of nature most of the calves dropped have been bulls.

Among the Holstein-Friesians there are four excellent females, Empress Josephine Fourth and three of her daughters, which will likewise make a good foundation of a dairy herd of that breed.

Swine.—I have asked for a suitable piggery every year since I came here, but this want has not yet been supplied. As a consequence we have not been able to do as much in the line of swine-breeding as I had hoped for. The College owns at present representatives of two breeds, the Berkshire and Poland-China, each of which is headed by a good boar, and there are six and eight pure-bred females of the two breeds respectively, of all ages, which are registered, or eligible to registration. Besides these there are upwards of forty head of hogs of all ages which are not eligible to registration, but which have been bred to use in feeding experiments, to save buying the hogs for that purpose.

It would be highly desirable to have the swine-breeding extended and four or five of the more important breeds added to the list now represented here.

Sheep.—The sheep have fared even worse than the pigs. Repeated and urgent requests for a sheep barn on my part have failed to bring the desired structure. Consequently the sheep had to be quartered in sheds and vacant stalls, as occasion permitted. Under such conditions there was no incentive to enlarge the flock, and the offspring have been sold off to farmers when they became too numerous for our accommodations. At present the flock numbers twelve head of all ages. One of these is the ram which was imported from England in 1891, and three of the ewes were acquired by purchase; the rest are their offspring.

Field Work.—As in former years, the arable land under the control of the farm department has the past year been devoted to experiments with field crops, which in my judgment is the only proper use to which the College farm can be put. That portion which is unsuitable for platting has been used for raising feed. About half of the tillable land now controlled by the farm department is rented from the Williston estate on a five years' lease. The lease will expire at the close of 1898, when possibly the farm will again be restricted to the land owned by the College. In view of this fact, it has been my

endeavor to put the College land in clover and grass, and thus give it a chance to recuperate while we had the use of the rented land.

Needs of the Department.—Many of the needs which I have presented from year to year are yet unsupplied, and new ones become apparent with the growth of the institution. The sheep barn, the piggery, the flooring of the cattle stalls, and the painting of all the farm department buildings, as well as the dairy building, have not been supplied by the Board. In addition, it would be highly desirable to improve the water-supply of the barn by laying a larger supply pipe and putting in two or three hydrants, so that the water-works could be used for fire protection. The small pipe now running to the barn is wholly inadequate for that purpose.

It would also be highly desirable to have the north yard paved in the same manner as the south yard has been paved, in order to keep the cattle reasonably clean and dry under foot in the yard during the winter.

I will again call attention to the necessity for procuring another Shorthorn bull instead of Golden Knight, if his heifers are to be retained in the herd.

In like manner, the old ram and the Poland-China boar should be disposed of, and new males put in their respective places.

All of which is respectfully submitted. C. C. GEORGESON,
Professor of Agriculture, and Superintendent of Farm.
COLLEGE, June 30, 1897.

Report of H. M. Cottrell,

Professor of Agriculture.

To the Board of Regents:

GENTLEMEN—The following report of the work in the farm department September 1, 1897, to June 30, 1898, together with the needs of the department, are respectfully submitted:

My work in charge of the department began September 1, 1897, six years after severing my connection with it as assistant to take the management of a thousand-acre dairy farm in New York. The noticeable changes during my absence were the improvement in the physical condition of the soil on the College farm and the deterioration of the College blooded herd—about one-third having tuberculosis and the rest, owing to drought, heat, and dust, being in an unthrifty condition.

My first recommendation to the Board was, that all diseased cattle should be killed. Dr. Paul Fischer making the same recommendation, the Board ordered the herd retested with tuberculin. The test

was made; Dr. James Law, Cornell University, and Dr. T. A. Geddes, Bureau of Animal Industry, United States Department of Agriculture, were called to council with Doctor Fischer and myself in regard to the result; and, after an exhaustive examination, the unanimous recommendation was, that the cattle reacting to the test—seventeen in number—should be killed. The Board approving, the animals were slaughtered October 20 and 21, 1897, and public post-mortem examinations were made by Doctors Law, Geddes, and Fischer, in the presence of the Regents, Faculty, State Live-Stock Sanitary Commission, members of the State Board of Agriculture, and a number of prominent veterinarians, stockmen, and others. Every reacting animal was found tuberculous. Doctors Law, Geddes and Fischer found the indications of the test doubtful with two animals, and recommended that one be slaughtered for beef and the other retested after calving. The one killed was found to be healthy; the other at retesting was found free from disease, and with her calf was sold for breeding.

These veterinarians reported that the remainder of the herd, having been twice tested and having shown no indications of tuberculosis, had a better guaranty of soundness than an untested herd, and could be sold for breeding purposes. The Board accordingly ordered a closing-out sale to be held November 18, 1897, and the cattle were put in sale condition. The attendance at the sale was good, the bidding spirited, and it was pronounced to be one of the most successful sales of blooded cattle held for years. The barns and yards were disinfected, as recommended by the veterinarians.

Amount received from sale of the cattle.....	\$2,780 94
Expense disinfecting barn and yards	\$191 15
Expense of testing the herd.....	406 20
Expense cattle sale.....	169 05
Total expense.....	768 40
Net returns from cattle	\$2,014 54

The herd was valued in the College inventory June 30, 1897, at \$5,250, making an overvaluation of \$3,235.46. By the College system of bookkeeping this amount appears in the expense of running the farm. The twelve sheep and lambs owned by the College were sold at the cattle sale, bringing \$70.32.

Doctors Law, Geddes and Fisher recommended that, as the swine had run with the diseased cattle, they should be sold fat, subject to slaughter. The swine were fattened, sold to butchers, inspected after slaughter by Doctor Fischer, and the diseased ones destroyed. They brought \$768.15.

After the sale the services of the farm foreman, George Sexton, were no longer needed, and he went to the mechanical department.

I had one class in the fall term, the fourth-year class in stock-breeding and feeding. All my available time during the fall term was spent as chairman of the committee on agricultural course of study in planning the new course. This course gives two and one-half times as much time to agriculture as was given in the old course, nearly four times as much to horticulture, increases nearly threefold the time devoted to biology, bacteriology, and veterinary science, and considerably increases study in botany, chemistry, and physics.

We began the new course of study in the winter term, 1898, and the farm department had three classes in the agricultural course and four classes in the dairy course. Assistant Burtis taught one class in the dairy course, and assisted with the other classes as necessary. Assistant Otis taught one class in the agricultural course until mid-term, and two classes in the dairy course throughout the term. I had the rest of the work of the seven classes.

With money received from the cattle sale, a herd of twenty grade cows was purchased in Lincoln county for supplying milk for the dairy school. This herd was tested with tuberculin; two were found to have tuberculosis, and were killed. The seed room adjoining the office in the barn was fitted as a dairy room, and equipped with the modern dairy apparatus used in private dairying. Six students entered the dairy course, the number being so limited because the announcement of the school could not be made until two weeks before the opening of the school term.

As chairman of the committee on farmers' institutes, I conducted the correspondence necessary to arrange for the thirty farmers' institutes held by the College during the winter of 1897-'98. I assisted in fourteen institutes, and delivered addresses before the State Breeders' Association, State Board of Agriculture, State Alliance, and National Creamery Convention. Mr. Burtis took part in four institutes, and Mr. Otis in three institutes and had charge of the butter room at the National Creamery Convention.

Most of my time in the spring term was spent in teaching. I had five classes throughout the term, and most of the time three lectures a day to prepare. At mid-term one class was divided, and Assistant Burtis taught one division the remainder of the term.

Postage on the correspondence of the department for the year amounted to twenty-two dollars.

State appropriations for farm fencing, \$150; farm implements, \$200, and agricultural museum, \$200, were spent as most needed.

The College must immediately make a large increase in the equipment of the farm department, or else fail to perform the work needed. Minnesota spent \$30,000, Wisconsin \$40,000, and New York \$50,000

in equipping their dairy schools. Kansas has spent for a dairy school \$534. The help given by these well-equipped dairy schools has enabled the dairymen of the states establishing them to reduce the cost of producing their butter, and to improve the quality, giving them a great advantage on the markets. Kansas dairymen need the same help from their dairy school. We cannot give it unless we have the necessary plant.

We should raise and feed cattle and hogs in such numbers as to make us one of the leading feeders of the state. By feeding large numbers our work would command respect, help the feeders of the state, and at the same time afford the best means of giving our students practical training in business feeding.

To properly equip the farm department in dairy and meat-producing lines, and for class work, we need as follows:

1. Two hundred and fifty grade dairy cows, fifty head to be bred to a typical bull of each of the following breeds: Jersey, Guernsey, Ayrshire, Holstein, and Shorthorn, the groups of cows being rotated each year until every cow has been bred to every bull in the test; the male calves to be fed for beef until ready for slaughter as finished steers, a record to be kept of the cost of feed, and of the grain, and an examination to be made of the carcasses after slaughter; the heifers to be fed for dairy purposes and to be tested for milk and butter production after reaching the proper age. Money will be needed to purchase these cows, to build a barn for them, and yards; to remodel the armory for holding the feed which they will require, and for altering our present barn, so that it can be used for the calves.

2. A dairy building large enough for the first floor to accommodate one hundred students in butter and cheese making and milk testing; the second floor to afford room for all classes in agriculture; and the third floor to be fitted out as an agricultural museum and agricultural library.

3. Ten car-loads of steers, ten sheds for them, and yards fitted with racks and water.

4. A piggery and yards to accommodate fifty brood sows and five boars, and the feed needed for them.

5. Fencing, \$500.

6. Two teams.

7. A collection showing the life-history of each of our farm plants and the effect on each of the different methods of planting, cultivating, harvesting, etc.

8. The farm has just enough implements for the necessary work. With our large number of students, it is desirable to have the leading machines of each class, and to test them for quantity of work accom-

plished and power required. Money will be needed for a dynamometer for this work and for the purchase of the implements.

9. The lease of the Williston farm expires this year. Money will be needed either to lease or buy land.

Dairy building and equipment.....	\$40,000
Dairy barn, yards, and alterations to old barn	10,000
Cows, 250 grade dairy.....	10,000
Steers, 200 head.....	10,000
Steer sheds, racks, yards, and water-supply.....	1,500
Piggery and pigs	1,500
Bulls, five.....	750
Fencing.....	500
Teams.....	400
Implements.....	350
Total.....	\$75,000

Respectfully submitted.

H. M. COTTRELL,

Professor of Agriculture, and Superintendent of Farm.

COLLEGE, June 30, 1898.

DEPARTMENT OF BOTANY.

Report of A. S. Hitchcock,

Professor of Botany.

To the Board of Regents:

GENTLEMEN—The work of this department during the last two years has been similar to that of the preceding two years. The herbarium has been augmented by exchanges. Plants have been sold to the extent of about \$400. You have appropriated an amount equal to this for the purchase of new specimens. Beyond this no appropriations have been made for the purchase of specimens. The herbarium is of fair size, but should be kept growing to keep pace with the growth of the institution.

In apparatus the department is equipped with most of the necessary pieces except student microscopes. The fourth-year class is becoming so large that our present complement of twenty-seven is not sufficient. Furthermore, the students in the agricultural course take this work in the third year instead of the fourth, and the class is likely to be larger on that account. I would recommend the purchase of ten more instruments and the construction of the necessary additional tables.

The class work is similar to that of previous years, and has been detailed in former reports.

The following is a tabulated statement of the undergraduate

students in the department. In addition, there was a class each term of postgraduate and special students of six to twelve, and a few others taking special laboratory work.

Year.	Term.	STUDY.	Divi- sions.	Gentle- men.	Ladies.	Total.
1896-'97....	Fall.....	Elementary botany.....	2	92	32	124
	Winter...	Physiological botany.....	2	33	24	57
	Spring....	Elementary botany.....	2	61	38	99
1897-'98....	Fall.....	Elementary botany.....	2	82	38	120
	Winter...	Physiological botany.....	2	41	31	72
	Spring....	Elementary botany.....	2	37	44	81

Respectfully,

A. S. HITCHCOCK.

COLLEGE, June 30, 1898.

DEPARTMENT OF CHEMISTRY.

Report of G. H. Failyer,

Professor of Chemistry,

and J. T. Willard,

Associate Professor of Chemistry.

To the Board of Regents:

GENTLEMEN—We submit the following report upon the work of teaching in the chemical department during the year ending June 30, 1897.

The methods followed and the character of the work have been the same as those of the last biennial period, and are fully set forth in the report for that time. The number of students enrolled in classes, the hours per week of each division, the number continuing in class throughout the term and taking the final examination, and other details, are shown in the following tabular statement:

SUBJECTS TAUGHT.	No. of divi- sions.	Hours per week.	En- rolled.	Exam- ined.
FALL TERM.				
Chemistry of foods, four weeks (Failyer).....	2	5	67	67
Inorganic chemistry:				
Lecture-room (Failyer, Willard).....	4	5	140	126
Laboratory practice (Breese).....	4	2	140	.....
Special chemistry (Willard).....			5	.....
WINTER TERM.				
Mineralogy, six weeks:				
Lecture-room (Failyer).....	4	5	121	118
Blowpipe analysis (Breese).....	4	5	121	118
Organic chemistry, six weeks (Willard).....	4	5	124	116
Special chemistry (Willard).....			7	.....
SPRING TERM.				
Agricultural chemistry (Failyer).....	2	5	61	58
Analytical chemistry:				
Lecture-room (Failyer, Willard).....	4	2	112	102
Laboratory (Breese, Failyer, Willard).....	2	8	112	102
Special chemistry (Willard).....			7	.....

The needs of the department in the way of a new laboratory were fully presented in our last report. We again urge the necessity of such building being provided as soon as practicable.

COLLEGE, June 30, 1897.

G. H. FAILYER,
Professor of Chemistry.

J. T. WILLARD,
Associate Professor of Chemistry.

Report of J. T. Willard,
Professor of Pure Chemistry,
and G. F. Weida,
Professor of Applied Chemistry.

To the Board of Regents:

GENTLEMEN—The following report of the work of the chemical departments for the current year is respectfully submitted, together with some suggestions for the future:

The work is begun for all students in the fall term of the second year with a general introduction to the subject of chemical facts and theories. The laboratory work accompanying this "general introduction" is carried on to much better advantage since it has been transferred to the afternoon and two consecutive hours are thus obtained.

In the winter term inorganic chemistry is continued (chemistry of the metals), but the greater part of the time in the winter term is devoted to elementary organic chemistry. It is intended that this elementary course shall be adapted (to use the words of Professor Remsen) "to the needs of all students of chemistry, whether they intend to follow the pure science, or to deal with it in its applications to the arts, medicine, etc. It is difficult to see how, without some such introductory study, the technical chemist and the student of medicine can comprehend what is usually put before them under the heads of 'applied organic chemistry' and 'medical chemistry.'"

This completes the required work in "pure chemistry." All the advanced courses in pure chemistry are elective. The required work in chemistry from this point on takes the form of chemical analysis and applications of chemistry (to foods, agricultural questions, etc.).

In the study of analytical chemistry the effort is made not only to impart the technical art but to give a broadening review of a large portion of the chemical field. This is feasible because of the fact that, in many instances, occurrence in nature, preparation or use in the arts depends on the same property or properties made use of in chemical analysis. This course is taken by all students

Agricultural chemistry is now required of students in the agricul-

tural course only. This gives a much smaller class, and it is hoped that a certain amount of laboratory work may be given notwithstanding our lack of room and facilities. The course is given by lectures, in which the important relations of chemistry and chemical investigation to the study of soils, air, plants and animals constitute the groundwork.

A course of lectures on the chemistry of foods considers, from a chemical standpoint, foods and their relation to nutrition. The aim is to treat the subject on broad lines adapted alike to personal application and to use in stock-feeding. This work is required of all except those in the engineering course.

By request of the president of the College, the professor of pure chemistry has acted as instructor to the third- and fourth-year classes in the subject of dynamic geology, and he accordingly expects to continue in charge of inorganic geology until this work is assigned to another chair.

By action of the Board of Regents, the chemical departments have been without a regular assistant during the past year, but we have been fortunate in having among our postgraduate students in chemistry Mr. R. W. Clothier, who has had some experience in teaching, and he has proved himself a valuable student assistant in our work. We are pleased to see that your Board has seen fit to retain him in this institution as a regular assistant, and feel confident he will increase in usefulness.

In addition, we have found it necessary to have other assistance with the laboratory classes, which we have found in Mr. R. H. Pond throughout the year, and Mr. A. T. Kinsley during the spring term. These young men, though undergraduates, had, by special study of chemistry, qualified themselves to give acceptable service.

The tabular statement at top of next page shows the number of students enrolled in our classes, and other details.

The division of the work between the professors and further information about the courses offered can be gained by referring to catalog (pages 50 and 51).

The need of a chemical museum, as well as the better housing of our mineralogical collection, are sufficiently set forth on page 65 of the last biennial report. In the same place you will find detailed statement of the insufficiency and other defects in the building at present occupied as a chemical laboratory.

We are pleased to know that your Board has ordered the drawing of plans for a new physico-chemical building, to be presented to the next legislature as one of our imperative needs.

The increasing size of our regular classes, and the requirements of

SUBJECTS TAUGHT.	No. of divis- ions.	Hours per week.	En- rolled.	Exam- ined.
Elementary inorganic chemistry (Weida and Willard)	4	5	144	126
Elementary laboratory work (Weida and Clothier)	4	2	150	135
Chemistry of foods, one-half term (Willard)	2	5	57	54
Advanced course (Weida)	1	5	6	6
Special chemistry (Willard)			4	4
WINTER TERM.				
Elementary organic chemistry, one-half term (Weida)	4	5	97	94
Advanced organic chemistry (Weida)	1	3	7	4
Analytical chemistry (Willard)	2	2	41	40
Laboratory work (Willard and Clothier)	1	8	41	40
Special chemistry (Willard)			7	7
General introductory work (Weida)	1	5	35	33
Elementary laboratory work (Weida and Clothier)	2	2	29	28
SPRING TERM.				
Elementary organic chemistry (Weida)	1	3	24	18
Dynamic geology (Weida)	2	5	117	109
Advanced aromatic compounds (Weida)	1	4	6	5
Chemistry of metals (Willard)	1	2	20	13
Laboratory work (Willard and Clothier)	2	2	20	13
Agricultural chemistry (Willard)	1	5	9	7
Analytical chemistry (Willard)	2	2	52	44
Laboratory (Willard and Clothier)	1	8	52	44
Special chemistry (Willard)			5	5

our special students and the Experiment Station, accentuate this need from year to year, and we hope that its urgency will be effectively presented.

In connection with the need of this building, we beg leave to submit again that the sciences of physics and chemistry are fundamental, the one dealing with *all forms of matter*, the other including *all forms of energy*. We beg to submit, therefore, that it is more necessary that these fundamental sciences should first be given adequate facilities for instruction and for research, than to care first for those in which all progress is impossible until the foundation in the physical and chemical sciences is well laid.

Respectfully submitted.

J. T. WILLARD,

Professor of Applied Chemistry.

GEO. F. WEIDA,

Professor of Pure Chemistry.

COLLEGE, June 30, 1898.

DEPARTMENT OF ECONOMIC SCIENCE.

Report of Thos. E. Will,

Professor of Economic Science.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of my work as professor of economic science for the year 1896-'97. The following table indicates the subjects handled and the number of students taught:

SUBJECT.	Ladies	Gentlemen.	Total students.	Divisions.
FALL TERM.				
Political economy, advanced	3	14	17	1
Geometry	8	18	26	1
Rhetoricals	66	113	179	5
WINTER TERM.				
Political economy, elementary	10	21	31	1
Political economy, advanced	1	9	10	1
German, elementary	3	23	26	1
Rhetoricals	65	123	188	5
SPRING TERM.				
Political economy, elementary	19	19	38	1
German	2	10	12	1
Rhetoricals	62	111	169	6

The interest in economic studies on the part of students has been marked and growing. A most gratifying disposition has been observable to pursue truth for its own sake, and for the practical results that might be expected to follow from its application; students regardless of previous views and leanings working together in perfect harmony; in the spirit of scientific inquiry, demanding only to know the facts and their bearing upon the great question, How may general well-being be most truly promoted?

As noted in my last report, the department, during this year, was still embarrassed by lack of opportunity to concentrate upon its appropriate work, the duties of assistant to the departments of mathematics and English absorbing much time and energy. Opportunity, moreover, for the development of a worthy economic department was still wanting thru the lack of economic studies in the course—a single brief term being allowed to this important subject; numerous students, nevertheless, elected economics as an extra study. Since, however, such work, whether pursued by undergraduates or postgraduates, was not permitted to count toward a degree, much difficulty was experienced in building up the department, in the absence of a more substantial foundation. My detail in the winter term to duties at

Topeka (the regular economics class being taught during this time by Miss Ivy Harner), and the new duties devolving upon me in the spring term, on account of the reorganization of the College, compelled the abandonment of practically all such special economic teaching, altho this work had grown in the fall term to very encouraging proportions. The opportunities for economic work were further narrowed by the discontinuance of the chapel lectures in economics, of which 25 were given in the two preceding years.'

The demand for economic literature, so imperative at the beginning of my work in the department, has been in a measure supplied. A substantial annual increase in its library equipment would, however, add materially to the value of the department.

In addition to the work above indicated, I have performed such duties as fell to me in connection with faculty committees, farmers' institutes and *Industrialist* work.

Respectfully submitted.

THOS. E. WILL,

COLLEGE, June 30, 1897.

Professor of Economic Science.

Report of Edward W. Bemis,

Professor of Economic Science.

To the Board of Regents:

GENTLEMEN—The following table presents the work done in my department during the year 1897-'98, the report for the previous year having already been prepared by Professor White and President Will:

CLASSES.	Gentlemen.	Ladies.	Total.	Divisions.
FALL TERM.				
Economic and social problems, fourth year	38	32	70	1
Economics, special	6	.....	6	1
WINTER TERM.				
Industrial history, fourth year	29	33	62	1
General history, second and third years	60	29	89	2
Economics, special	4	.....	4	1
SPRING TERM.				
Finance	31	.....	31	1
United States history, second and third years	64	46	110	2
Economics, special	5	.....	5	1

In addition to the above, I gave five chapel lectures, to the entire body of College students, in the fall, upon the following subjects: Strikes and Injunctions, Co-operation, Labor Legislation, The Modern City, State and Local Taxation.

The work with the senior class throughout the year consisted of a study of the history, development and present status of the labor question and other industrial problems, together with a study of such

movements as labor organizations, socialism, and various social reforms. The history of the money question, especially in Europe, was studied, while President Will lectured to the class four weeks upon the monetary history of the United States.

A very prominent feature of the work, both in this and other classes, was the requirement of a large amount of reading in the College library, along the lines of class work, and the outline in note-books of what was read. The work was conducted partly by lectures and partly by the use of three text-books—Wright's *Evolution of Industry in the United States*, Taylor's *Factory System in Europe*, and Ely's *Socialism and Social Reform*.

The special class in economics consisted of advanced students, partly graduates, who took up a study of city problems, especially city monopolies and state and local taxation, reading Albert Shaw's works on *Municipal Government in Great Britain and in Continental Europe*, and Seligman's *Essays in Taxation*. It also made special investigation of Kansas problems. One of these, upon the water-works of Manhattan, prepared by Mr. S. J. Adams, will appear in the *Industrialist*, and part of it in the report for 1898 of the Kansas Bureau of Labor Statistics. The study of the public electric-light plant of Topeka, by Mr. H. M. Thomas, will appear this winter in the *Industrialist*. A considerable portion of it, also, will appear in the report of the Kansas Bureau of Labor Statistics. The study of local taxation in Riley county, by Mr. William Anderson, will also appear, probably, in the *Industrialist*, in due time.

The students in this course compared the assessments of all the properties sold in Riley county during 1897 with the prices obtained for them. They also carefully followed the work of the county board of equalization during its Manhattan meeting, and studied the assessment and probable value of every piece of property in certain selected blocks in Manhattan. They thus gained a familiarity with the inequality of assessments and general chaos connected with the whole subject of Kansas taxation.

In general history, Myer's *General History* was used as a text-book, supplemented by lectures on the progress of civilization from the earliest Chaldean and Egyptian times down to the present.

The course in United States history was conducted by topics, the class having, for their text-books, Hart's *Formation of the Union* and Woodrow Wilson's *Division and Reunion*, but making large use of the College library.

These methods of study, it will be seen, depend to as great a degree upon the library as other departments depend upon their laboratories. It would seem, therefore, that without taking anything from the

already inadequate appropriations to the other departments, the state might well afford to put several hundred dollars a year into the building up of a good library of history, economics and political science at the College. I therefore urge that henceforth the yearly appropriations be at least \$250 for the department of economic science and \$250 for history. If our people wish as good an opportunity to study industrial problems in their own institutions as the Standard Oil and other monopolies offer in their institutions, far more equipment is necessary. One such private institution that might be mentioned spends over \$40,000 yearly in this department, while less than one-tenth of that amount is spent here, or at most state institutions.

In addition to the class-room work, three farmers' institutes have been attended, articles have been written for the *Industrialist*, the Kansas bureau of labor statistics, *The Forum* (March, 1898, on the lease of the Philadelphia gas-works), the Dictionary of Political Economy (published by Macmillan, article on trade-unions in America, in press), and an article on the insurance of working men in America, in the new edition of the *Handvörterbuch der Staatswissenschaften*, edited by Conrad, of Jena, Germany.

Very respectfully yours, EDWARD W. BEMIS.

COLLEGE, June 30, 1898.

DEPARTMENT OF ENGLISH.

Report of Oscar E. Olin,

Professor of English Language and Literature,

and Alice Rupp,

Instructor in English.

To the Board of Regents:

GENTLEMEN—We have the honor to submit the following report of work in the English department for the past two years. The studies in this department and their arrangement by years and terms are as follows:

Grammar, as a preparatory study, is carried through the year. The first year includes analysis, structure, and composition. These are one-term studies, but for the convenience of students the classes are so divided that each study is given in two different terms. This gives to those who cannot be present every term an opportunity to carry forward their English work in order. The second year includes no English work except rhetoricals. A term of theme writing has, however, been added to the course for this year, and will be given first in the fall term of 1898. The third year includes the elements of rhetoric, given in the spring term. The fourth year has two terms of

literature—one on the development of English literature, given in the fall term of 1897 and the winter term of 1898, and one on nineteenth-century literature, given in the spring terms of both years. In addition to this, special classes in literature have been formed two terms in each year.

The classes of each college year have received instruction and drill in rhetoricals once a week. This work includes declamation, essay writing, debate, and interpretive reading in the first- and second-year classes, with the addition in the higher classes of the preparation and public delivery of original orations. The work of the fourth-year classes for 1897 was under the direction of Professor White. Professor Will had charge of the third-year and some divisions of the second-year class. The remaining classes were divided, most of them being taught by Mr. Whitford. With the reorganization of the College at the close of last year, all the rhetorical work passed into the newly established department of oratory.

The arrangement of classes under the direct charge of the department, the enrollment and the division of work are shown in the following table:

BRANCHES.	1896-'97.			1897-'98.		
	Gen- tlemen.	Ladies.	Totals.	Gen- tlemen.	Ladies.	Totals.
FALL TERM.						
Grammar (Rupp).....	48	6	54	111	19	130
Analysis, four divisions (Olin, Rupp).....	108	75	183	92	72	154
English structure (Rupp).....	16	5	21			
English literature (Olin).....	33	24	57			
English literature, special (Olin).....	1	7	8	2	4	6
WINTER TERM.						
Grammar (Rupp).....	25	4	29			
Analysis (Rupp, Olin).....	59	21	80	66	26	92
English structure (Rupp).....	44	16	60	44	47	91
Composition 3 (Olin).....	90	56	146	77	33	110
English literature 2 (Olin).....				37	34	71
English literature, special (Olin).....					4	4
SPRING TERM.						
Grammar (Rupp).....	23	2	25	27	6	33
English structure (Rupp).....	74	45	119	63	20	83
Composition (Rupp).....				15	30	45
Composition (Olin).....	40	14	54	21	22	43
English literature (Olin).....		24	24	5	37	42
Rhetoric (Olin).....	39	27	66	39	31	70

Preparatory classes in English grammar, other than those mentioned above, have been taught by postgraduate students.

We have also done the usual committee and editorial work. The department has been represented at farmers' institutes and many educational associations.

Respectfully submitted.

OSCAR E. OLIN,

Professor of English Language and Literature.

ALICE RUPP,

Instructor in English.

COLLEGE, June 30, 1898.

DEPARTMENT OF HISTORY AND POLITICAL SCIENCE.

Report of Francis H. White,

Professor of History and Political Science.

To the Board of Regents:

GENTLEMEN—The following table presents the work done in my department during the past year:

CLASSES—1896-'97.	Gentlemen.	Ladies.	Totals.	Divisions.
FALL TERM.				
General history, third year.....	43	31	74	2
United States history, first year.....	30	4	34	1
History of the nineteenth century, special.....	1	1	1	1
Rhetoricals, fourth year.....	37	30	67	2
WINTER TERM.				
United States history, first year.....	33	7	40	1
Civics, third year.....	23	26	49	1
English history, special.....	3	3	3	1
History of science and industry, fourth year (half term).....	32	26	58	1
Rhetoricals, fourth year.....	35	31	66	2
SPRING TERM.				
Civics, third year.....	26	13	39	1
United States history, first year.....	11	4	15	1
Advanced United States history, special.....	2	2	2	1
Rhetoricals, fourth year.....	33	30	63	2

The work in history during the past year has been made more satisfactory by the use of the charts and maps noted in my previous report, as well as by additional library facilities and minor changes in methods of teaching. Several students found time to take special courses in the history of the nineteenth century, English history, and advanced American history. In teaching political science, it has been my constant aim to see that both sides of questions in dispute were presented, and that students were given full opportunity to express their own views.

Rhetorical work has absorbed much of my time and strength during the nine years of my connection with this College, but it is impossible to show this fact by a statement of the number of hours of class work. The many private rehearsals and conferences with students are not indicated in the above table, and cannot be.

During the past year I have written a number of editorials for the *Industrialist*, and have served on the following committees: Catalog, grades and examinations, public exercises, and *Industrialist*. Besides these College duties, I have read a paper before a farmers' institute, and delivered several lectures.

Respectfully submitted. FRANCIS H. WHITE,
Professor of History and Political Science.

COLLEGE, June 30, 1897.

Report of Frank Parsons,

Professor of History and Political Science.

To the Board of Regents:

GENTLEMEN—The following table presents the regular class work under my care during the past year, the first of my connection with the College.

CLASSES — 1897-'98.	Gentlemen.	Ladies.	Totals.	Divisions.
WINTER TERM.				
General history, third year	47	23	70	2
Civics, third year	36	14	50	1
SPRING TERM.				
Nineteenth century history, third year	22	25	47	1
Psychology and logic, fourth year	15	30	45	1

History has been taught by lectures, reference reading, discussions, analytic essays, and written tests, and in general history a text-book and recitations have been employed in addition to the methods just named. Throughout the teaching of history the aim has been, not merely to impress names, dates, and facts, but to lead the student to search for causes, comprehend the philosophy of history, and understand the ethical aspects of the movements and events investigated. In nineteenth century history, the student took a special interest in the material progress of the United States, the movement toward constitutional government and democratic forms in almost every country of Europe, and the lives of Bismarck, Gladstone, and Lincoln. Many of the class read widely, and a number of the outline essays handed in were exceedingly creditable pieces of work.

Industrial history and United States history have been in charge of Professor Bemis. (See department of economics.)

In civics the aim has been to study the history and development of law and government, their present condition and organization, and the chief problems awaiting solution. Special attention was given to the constitution, laws and institutions of Kansas. Much pleasure and profit came to the students from their town meetings and legislative and congressional assemblies.

The selectmen, governor, speaker, chief justice and other officers elected by the students performed their duties with care and skill, and the discussion of bills and resolutions were courteous and intelligent. Fiske's Civil Government in the United States was used as a text-book, supplemented by daily lectures.

Mr. Eltwed Pomeroy, president of the National Direct Legislation League, while visiting the College, gave the civics class a talk on the referendum movement. Senator Hessin was invited to address the

class upon the objections to the referendum, but was unable to find the time.

In psychology and logic good work was done by the fourth-year class, and much interest was taken in the numerous experiments made. This work needs more time and a better laboratory outfit. For a fuller description of aims and methods, see the catalog for 1897-'98.

During the winter term I gave a series of five lectures in the chapel, before all the students, on Saturday afternoons, on the dates and subjects following:

January 8.—Government by and for the people.

January 22.—Partizanship and corruption.

February 5.—Administrative abuses.

March 5.—Some leading reforms in government.

March 19.—Manhood and mutualism.

Everywhere it has been my aim to present impartially the whole range of fact and theory relating to the subjects taught, simply opening all the doors to the student, giving him references to authorities on every side of disputed questions, teaching him scientific methods of investigation and criticism, cultivating tolerance, open-mindedness, courteous discussion, and candid, ready and appreciative listening, with a view to doing justice to the thought of others, and getting

SCIENTIFIC ATTITUDE AND METHOD.

I.—Mental and spiritual attitude.

1. Scientific curiosity.
2. Scientific caution.
3. Open-mindedness.
4. Tolerance.
5. Sympathy.
6. Love of truth.

Desire to arrive at the exact truth, overcoming all prejudice, all bias of race, locality, association, and training; respectful consideration of statements at variance with our preconceived opinions, and of ideas and beliefs and institutions that differ from our own; sympathy for all men, and an earnest effort to put ourselves in the place of others, and comprehend the lives and motives of people unlike ourselves; love of truth for its own sake, regardless of the consequences to ourselves.

II.—Methods.

Analysis
and
synthesis.

{ Selection.
Arrangement.
Generalization.
Deduction.

{ Investigation.
Criticism.
Comparison.
Study of
Coexistences.
Sequences.
Causation.
Ethical
aspects.

{ Facts must be observed, analyzed and classified.
Contrasts and likenesses noted.
Testimony sifted and weighed.
Documents, authorities, observations and experiments criticized.
And a diligent search made for causes and consequences, in order to ascertain
THE LAWS OF PHENOMENA,
thru which we may
PREDICT OR CONTROL the
FUTURE.

at their real meanings, identities, and differences, and encouraging the student to form careful, well-based opinions of his own. A part of one of the circulars supplied to my students in this connection is shown at bottom of page 75 and may be of interest.

In addition to the regular classes, the writer has given postgraduate work in the law of torts, contracts, and equity, delivered a series of five chapel lectures to the whole student body and several lectures outside the College, and contributed an article to the *Industrialist* almost every month.

Preparatory classes in elementary United States history have been taught by postgraduate students.

Respectfully submitted.

FRANK PARSONS,

COLLEGE, June 30, 1898.

Professor of History and Political Science.

DEPARTMENT OF HORTICULTURE AND ENTOMOLOGY.

Report of S. C. Mason,

Professor of Horticulture.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report on the condition of the horticultural department and on the work done during the year ending June 30, 1897:

During the fall and spring terms I have taught the regular second-year classes in horticulture in two divisions each term. The work, as heretofore, has been given in lectures, in which are set forth as fully as the brief time will allow the elementary ideas on the structure and growth of cultivated plants; the modes of propagating them; nursery work; vegetable gardening; culture and management of orchards, vineyards, and small-fruit plantations; a study of botanical and horticultural characters of cultivated fruits, with selected lists of varieties, and hints as to gathering, storing, and shipping; and brief notes on plant diseases and their treatment.

Twenty-four wall charts, drawn under my directions, have afforded valuable aids in illustrating practical points in the lectures, and during the spring term I was enabled to make a brief use of the three demonstration microscopes allowed me at the April meeting.

The addition to our museum of a collection of well-executed models of our standard varieties of fruits would greatly increase the interest and effectiveness of teaching in these lines.

During the winter term the young ladies of the fourth year were given the usual work in floriculture, comprising, first, a course of

lectures covering the principles of propagating flowering and ornamental plants, construction and heating of conservatories and green-houses, care and culture of plants in and out of doors, and the principles of landscape-gardening as applied to the beautifying of home places; second, practice work in the three plant houses provided for their use, in the making of cuttings, potting off and repotting of young plants, sowing of flower seeds, transplanting, and as general a line of work in the care of house plants as could be offered in the time.

I am not aware of any institution in the country that offers equally good facilities for this class of work. In this practical instruction I have had, as heretofore, the efficient aid of Mr. Wm. Baxter, the greenhouse foreman.

The industrial work in the department has gained an interest and prominence from year to year as the equipment and facilities for teaching have improved, and I cannot refrain from the opinion that in this actual contact with growing plants and trees is offered one of the most valuable means of training in the department.

While but a single term is offered to young men in horticulture in the present course, there is a compensation in the lines offered in the extended course during the past year, and this has been taken advantage of in a way that is quite encouraging for a beginning. During the fall and winter terms a class of six, comprising two under graduates and four postgraduate students, pursued a course of forestry which embraced a field study of native and cultivated species of forest-trees found in the College grounds and vicinity; library research on the more important American forest species; the economic and climatic value of fruit growth; and a laboratory of the physical characters of a number of the most important American species of wood. In the winter term a text-book, Nisbet's Studies in Forestry, was completed.

During the spring term a course of lectures was given to a class of eight, three undergraduate and five postgraduate students, in landscape-gardening, particularly applied to the beautifying of home places. Our extensive ornamental grounds and arboretum afford a very valuable amount of material for the study both of species and of the effects secured in grouping, and a series of photographs which I have begun to collect added much to the illustrative material.

I make this special mention of these advanced lines of work because of the fact that this is the first year that such classes have been taught in the history of the institution.

It may be of interest in this connection to state that at the meeting in Washington last fall of the Association of American Agricultural

Colleges and Experiment Stations the report of the secretary of the section of horticulture and botany showed that for the year ending June, 1896, the Kansas Agricultural College led all others in the number of students receiving instruction in horticulture.

My assistant, Mr. F. C. Sears, having been elected to the chair of horticulture and botany in the Utah Agricultural College in January, the place has been very acceptably filled by Mr. Isaac Jones, of the class of 1894, who had charge of the irrigation work at Oakley last year.

Following is the financial statement for the year ending June 30, 1897:

DEBITS:

Cash expenditures	\$3989 73
Department charges	121 34
Decrease in inventory	449 55
Total.....	\$4560 62

Distributed as follows:

Grounds	\$933 96
Gardens and greenhouse	1071 46
Teams	180 63
Tools.....	54 91
General repairs and supplies	166 51
Office supplies and assistance	53 05
Supplies and assistance, instruction	422 48
Museum	12 60
Freight, express, and postage	34 73
Labor for Experiment Station and other departments.....	1180 74
Decrease in inventory.....	449 55

CREDITS:

Cash receipts.....	\$2155 03
Department credits	110 91
Balance—cost of department.....	2294 68
Total	\$4560 62

Respectfully submitted,

S. C. MASON.

COLLEGE, June 30, 1897.

Report of Edwin A. Popenoe,

Professor of Entomology and Zoology.

To the Board of Regents:

GENTLEMEN—Herewith is presented a report upon the work done in the department of entomology and zoology for the period intervening between the date of my last report and the close of my service, August 31, 1897.

During the last school year I taught the classes in entomology, zoology, and geology, the total enrollment by terms in each class being as follows:

FALL TERM.	
Entomology, in two divisions.....	52
Special zoology.....	2
Special entomology	3

WINTER TERM.	
Zoology, in two divisions	67
Special entomology	2
SPRING TERM.	
Entomology, in two divisions	76
Geology, in two divisions	63
Special entomology	3

Beside the above, I have had regularly in each term the oversight of a varying number of postgraduate students, resident and non-resident.

I have further taken active part in the work of the faculty committees on farmers' institutes, library, grounds, and postgraduate courses, and have had the chairmanship of the committee on museums, together with the work of curator of the general museum. Participation in the work of numerous special committees, connected with discipline and administration of College affairs, has also occupied much time. I have attended as lecturer, on my special topics, four farmers' institutes, and the state and local horticultural societies. Of my work as entomologist of the Experiment Station I have spoken elsewhere.

The museum has naturally called for the expenditure of much of my time and thought. In the several departments of the museum general progress has been made. The work of relabeling has gone steadily on, demanding my personal attention to the redetermination of a great many of the specimens as well as their rearrangement and cataloging.

In the entomological collections, representative groupings of the Kansas insect fauna have been completed, so far as the material would allow, by the arrangement of completely labeled series of the Lepidoptera, Hymenoptera, Orthoptera, and Coleoptera. The Myriapoda and Arachnida have also been displayed, with illustrative structural drawings, and to all groups have been added an abundance of material by the collections and laboratory work of the department force. In the zoölogical museum proper, the mounted birds and mammals have been cleaned, relabeled, and rearranged in more systematic order, as far as the completion of the cases would permit, and many specimens of forms not before represented have been added. The collections of reptiles, batrachians and fishes have also been increased, especially in the two first named. The conchological collections have received substantial additions, and have been carefully rearranged and relabeled, in a manner that carries its own commendation. Other groups have received less attention, though all have received material additions.

The lack of proper illustrative material has heretofore been most seriously felt in the geological museum, which, when coming into my hands, consisted, with the exception of a very few series, of a mass of

material in a state almost valueless, owing to the long-time loss of the original data, and the consequent mixture and loss of what were once valuable specimens. Forced by my needs as teacher in geology, I have made special work of the reorganization of this part of the museum, and the results will be seen upon a view of the cases as they now stand.

There is now ready for the students of this science a fairly representative collection throughout the series. The greater part of the material is new; much of it due to my personal work in the field, with substantial aid by my colleagues, Professors Mason and Failyer, and by interested students. The "Educational Series of the Rocks," prepared and presented by the United States Geological Survey, a most valuable addition, was secured through the efforts of President Fairchild, and two very important additions, "Series Illustrating Structural and Phenomenal Geology,," and the "Historical Series," were purchased of the Ward Natural History Establishment, at Rochester, N. Y. These, with the material from other sources, and with what could be made available of the old collections, have all been mounted on neat cherry blocks, with ample labels, and the whole collection, with the exception of duplicate material stored in the basement, has been entered in a new record book, the specimens numbered in serial order, with later material in the order of accession. To avoid the danger of future loss of data, the record number of the specimen, where its size would allow, has been painted upon the object itself as well as written upon the label, and a reference to the record will serve at any time to verify or to replace the label, should this be lost. In consequence of the work put upon this feature of the museum, it is not too much to say that for the first time there is now a creditable and serviceable geological collection at the College. While several of the important geological formations are yet inadequately represented, especially in their fossils, the basis is laid for their ready incorporation on accession. In securing these desiderata much of the duplicate material may be of value, through judicious exchange.

In closing, I must bear testimony to the faithful and efficient service of my assistant, Mr. F. A. Marlatt, and my student helpers, Miss Bertha L. Kimball, Mr. J. B. Norton, and Mr. C. S. Pape.

Respectfully submitted.

EDWIN A. POPENOE,

Professor of Entomology and Zoology.
Curator of the General Museum.

COLLEGE, June 30, 1897.

Report of E. E. Faville,

Professor of Horticulture and Entomology.

To the Board of Regents :

GENTLEMEN — Permit me to submit herewith a report of the work done in the department of horticulture and entomology for the period beginning September 1, 1897, and ending June 30, 1898.

At the beginning of the year entomology, which was previously combined with zoölogy, was transferred to the department of horticulture, and the entomological plant in Science hall was transferred to the upper floor of the armory, which was vacated by the veterinary department.

The aim of the department has been to educate the student in as practical and scientific a way as possible. Economy in carrying this out has been held to closely. In prosecuting this idea, the endeavor has been not to make the gulf between the practical farmer or fruit-grower and the scientifically trained student broader, but rather to narrow it, and to put the student in close contact with the horticultural practices of the farm. The new agricultural course of study adopted in the fall by your Board has greatly enforced this idea, by the introduction of such horticultural studies as will give the student a thoro training in those branches pertaining to horticulture on the farm, and lay a foundation for advanced scientific investigation and study. This change has proved of vast benefit to the department, by giving time for thoroness in the various subjects considered.

The above change in the course gives 163 hours more of required horticulture in the four years' course than was given in previous years. The number of hours of instruction in entomology remains the same. Aside from the regular classes, special classes in horticulture, floriculture and entomology have been instructed and postgraduates have taken work during the past year, both in horticulture and entomology.

Much stress has been laid on the importance of industrial work in conjunction with class instruction. The industrial work has been conducted along the line of instruction in manual labor, comprising processes of the handicraft unfamiliar to the student, thereby avoiding a waste of time by the omitting of such operations as are familiar to the student at home. Following is a table showing the number of students taught in the department during the year :

FALL TERM.	
Horticulture	111
Special horticulture.....	9
Entomology.....	35
Industrials.....	53

WINTER TERM.	
Floriculture	27
Pomology.....	20
Special horticulture.....	3
Industrials.....	13
SPRING TERM.	
Horticulture.....	8
Floriculture.....	16
Special floriculture.....	7
Entomology.....	13
Special entomology.....	2
Special horticulture.....	5
Industrials.....	37

A department library has been started, to which several hundred volumes have been added during the year. In addition to this, a rack containing a file of current magazines and periodicals of horticultural and entomological news has been placed in the department for the use of students. A laboratory for the use of students in entomology has been fitted up, together with an insectary building, 12x70, for the study of the habits and life-history of insects. Funds are necessary for the completion of these two valuable acquisitions. At the horticultural barn the stable has been removed to the basement and the machinery room placed on the first floor above.

As superintendent of the grounds, I have had the supervision of the construction of lawns and drives about the new Domestic Science building. In addition to this, a considerable amount of labor has been placed on the roads and walks about the buildings; a macadamized road has been built from the Main building east to the foot of the hill. Trees and shrubs adjoining walks and drives have been plainly labeled for the benefit and convenience of students and visitors. The legislative appropriation of \$200 for the horticultural museum and the balance of the appropriation of \$60 for tools has been expended. In the former instance the appropriation was expended in the purchase of clay fruit models and of a framed herbarium case for the exhibition of a grape herbarium which is being completed by the department. A number of tools has been purchased, to meet the needs of the department.

The state appropriation of \$300, for fire protection of the buildings, has been expended in the purchase of fireman lanterns, ladders, axes, hose-nozzles, and 750 feet of hose, making it possible to reach all of the College buildings with a stream of water from the main pipes, excepting the armory and farm barns.

Needs.—The greenhouses containing palms and exotic plants are very much in need of repair. Many valuable plants in these houses have become too large for their quarters, and it is hoped that you will ask the state for funds sufficient to build a suitable conservatory, which would greatly increase the opportunity for horticultural and botanical study. The granting of an increased orchard area for a variety or-

chard, where several specimen trees of a variety could be presented, would prove of great value to the department. I would further ask that your Board consider an extension of the irrigation system into the vineyard and peach orchard, and that funds be provided for the construction of a root cellar, for the storage of apple grafts and nursery stock, thus affording an opportunity for a better study of practical nursery work.

A good beginning has been made toward a horticultural museum. To further this important work, it is necessary that an additional sum be granted for the next biennial period.

There is a great need of proper roads and walks about the College grounds. During the wet weather the main roads became almost impassable. They and the walks wash badly during heavy rainfalls. It is hoped that active steps will be taken to obtain funds for the purpose of placing all the walks and drives in a respectable condition.

The fire protection of the College buildings is still inadequate, making it imperative that a fund be provided for the purpose of perfecting the present system.

During the past College year I have attended six farmers' institutes and several horticultural meetings held in various parts of the state.

My work in the Experiment Station has been chiefly to outline work of investigation and put into operation several experiments which are now in progress. One bulletin, No. 77, on "Some Insects Injurious to the Orchard," has been published.

Respectfully submitted.

E. E. FAVILLE.

COLLEGE, June 30, 1898.

DEPARTMENT OF HOUSEHOLD ECONOMICS.

Report of Nellie S. Kedzie,

Professor of Household Economy and Hygiene.

To the Board of Regents:

GENTLEMEN—The following report of the work done in the department of household economy and hygiene during the year ending June 30, 1897, is respectfully submitted:

During the whole year the work has been unsatisfactory, because the classes have been too large for the rooms assigned this department. However, there has been some good work done, and the classes in the department have been larger than ever before in the history of the College.

I have had only student help, and that only since the beginning of

the winter term. Miss Maud Gardiner and Miss Ivy Harner have been very efficient in the laboratory, where they have assisted me in the class work.

The following table gives the numbers in classes during the year ending June 30, 1897:

CLASSES.	Fall.	Winter	Spring.
Hygiene.....	22		
Special cooking	15	18	13
Household economy (lectures).....		48	
Laboratory practice.....		46	
Dairying and cooking			43
Postgraduate class.....	13	10	12
Total each term.....	50	122	68
Number of students taught in department.....			240

The hygiene class listened to lectures four days in the week, and brought essays on previously assigned topics on the fifth. The essays were directly in line with the lectures given.

When upon the subject of food, two weeks were devoted to demonstration lectures upon foods for invalids; some demonstration lectures upon the best methods to pursue in case of accidents were also given.

The special cooking class spent one-half the term in work on fruit, which they canned or made into preserves, pickles, or jellies. The second half-term the class was in divisions; and while one division prepared lunch the other division were busy with mince-meat or fancy breads, with lessons upon buying meats, given by having an ox cut up for their benefit, or upon the no less important lesson of caring for cupboards, fruit-room, and storeroom.

The lunches prepared by the class were served by members of the same class to students or teachers, who pay ten cents each, and eat the warm lunch rather than go home at the noon hour.

In the winter term, the second-year class having had one term of chemistry, listened to a lecture every day upon foods. The lectures commenced with the water and milk foods, following the line of work which takes up foods in their order, according to the amount of work required to prepare them for the table, doughs coming last. This class spends one hour each day in the kitchen laboratory, where each member cooks food, or sets tables, or serves lunch. The class is in divisions of two girls each, and each division cooks a dish of food which is sufficient to serve on a family table.

In the spring term, the same second-year classes take one hour each day in the kitchen laboratory, where they either cook or work in the dairy, where each girl has such practice as will give her experience in the whole process of butter-making. Every member of the class washes the milk-pails, skims the milk, churns, washes, salts, works over and prints butter, while a few small cheeses are made before

the whole class, that every member may know the process of cheese-making. Cottage cheese is made frequently during the spring term.

The postgraduate students listened to lectures two hours each week, and cooked three hours. They also spent several hours each week on essays relating to the subjects of the lectures, and handed these essays in at stated intervals.

During the year this class had charge of the work of preparing the usual breakfast, dinner and tea which were given to the Board, the faculty, and their wives. They also, with the assistance of the other classes, prepared a banquet for the Academy of Language and Literature, which met at the College in April; and all the classes together prepared the refreshments served at the alumni reunion in June. The serving of the alumni banquet was done entirely by the second- and third-year classes.

During the winter term, a reception was held every week in the office of the domestic department. This was planned, prepared for, carried through and the dishes washed by one division of the post-graduate class, each girl having an opportunity to prepare for one reception.

The nutting picnic of the fall term and the collecting picnic of the spring term, as well as many smaller picnics, gave opportunity for practice in preparing lunches as well as some experience in out-of-door cooking. In all the teaching, the aim has been to train each girl into a practical, helpful woman.

The department has consumed a large quantity of materials, as was necessary with large classes, but the receipts from lunches, dinners, banquets and from various foods sold to outside parties have been equal to the amount expended. Practically, the department has cost only the labor that has been paid for. It has been able to dispose of its cooked products for enough to cover the cost of materials used in class work.

It may be of interest to state that the classes used 1200 pounds of sugar, 1000 pounds of flour, and 300 dozen eggs, while the meat bill was \$97.

The following is a statement of expenses in the department:

New equipments and repairs.....	\$55 61
Materials for cooking, including ice and milk for dairy.....	576 61
Paper for department.....	8 63
Student labor.....	237 27
Increase in inventory.....	96 75
Receipts from lunches and materials sold.....	571 05

During the year I have taken my turn, with other members of the faculty, in writing for the *Industrialist*, in lecturing in chapel, and in the work of farmers' institutes, as well as upon the faculty committees for general College work.

In leaving the work in this institution, there is much satisfaction in looking back over fifteen years' of constant growth.

The outlook for domestic economy work in the Kansas Agricultural College was never so favorable as to-day.

A \$16,000 building has been provided by the state, and the largest and most enthusiastic classes the institution has ever known in this line of work stand ready for instruction in the domestic economy building.

Ten graduates of the College who are teaching household economy in other institutions, as well as the hundreds of girls who are in homes, testify to the helpful work the department has done in the past. In a new building, and with suitable equipment, both of which are now provided, the work of the future should be much more strong and helpful than that of the past.

Respectfully submitted.

NELLIE S. KEDZIE,

Professor of Household Economy and Hygiene.

COLLEGE, June 30, 1897.

Report of Helen Campbell.

Professor of Household Economics from September 9, 1897, to April 1, 1898.

On investigation of the strong department in which Mrs. Kedzie's admirable work had been done, it became plain that, with the opening of the new building, methods more fully up to date could and must be adopted. The substitution of household economics for economy marked the blending of both natural science and sociology in their steadily increasing application to the business of every-day life. In addition to the industrial cooking, special courses were planned for, the object being a minuter knowledge of the essentials of living, coming under the following heads:

1. How to choose healthful locations and plan convenient, suitably furnished houses.
2. How to ventilate, warm and light in the best manner both public and private buildings.
3. How to provide not only attractive, appetizing food, but that suited to the age and occupation of the eater.
4. How to judge clothing materials and all fabrics for household use, and prepare them in the best manner.
5. How to guard the water-supply, preserving it from taint and infection, and providing a supply suitable for drinking and for washing.
6. How to care for milk in the best manner, keeping it free from germs.
7. How to insure rapid and sanitary drainage and the prompt removal of garbage.

To secure some portion of this knowledge as foundation for life in

College, a short course in hygiene was arranged for first- and second-year students, preceding the full term of fourth-year work.

To enable students to pass the examination for the work of cookery in public schools, the methods of individual work as used in Pratt and other institutes were adopted so far as facilities admitted. Aside from this, the usual order was followed, the fall-term classes containing thirty-three students, the winter classes having twenty-five, and the hygiene class forty-six.

The bitterness excited by the reorganization was in fullest evidence among the fourth-year students, who made the way as difficult as their powers admitted, as far as possible influencing the third-year students, and thus, naturally, classes lessened in numbers and the spirit of antagonism ruled.

The sewing department has been fortunate in having one of the most admirable of teachers, Miss Harriet Howell, a graduate of Pratt Institute, scientific in her method and full of tact and resources, fully coöperating in my most earnest wishes for the standing of the department.

My chief satisfaction has been the planning for, organizing and seeing in successful operation the lunch-room for students, which opened January 27. The dietaries used in the Boston Institute of Technology, as prepared by the famous New England Kitchen, were made the foundation, the aim being to use the best materials in the best way, at the lowest possible cost to the student. From January 27 to February 28, the number fed was 2984. For the month of March, 3920, at a cost of eight and one-third cents a meal, twelve tickets being sold for a dollar.

In leaving the work to hands still but partially trained, I can only wish that the same law of providing the best may still rule, and no false economy lower the standard set. These are matters for my successor, and the status among educators of the new building will be determined by your choice.

Respectfully submitted.

HELEN CAMPBELL,

COLLEGE, April 2, 1898.

Professor of Household Economics.

Report of Charlotte J. Short,

Acting Professor of Household Economics during Spring Term of 1898.

To the Board of Regents:

GENTLEMEN—The laboratory work of the spring term was carried on along the same lines that Mrs. Campbell had begun, and the lunch-room was also kept in operation.

Respectfully submitted.

CHARLOTTE J. SHORT.

COLLEGE, June 30, 1898.

DEPARTMENT OF INDUSTRIAL ART AND DESIGNING.

Report of John D. Walters,

Professor of Industrial Art and Designing.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of the department of industrial art and designing, for the biennial period ending June 30, 1898. The enrollment for each term, by classes, will appear from these schedules:

1896-'97.

TERMS.	Free-hand.		Mechanical.				Descriptive geometry.....	Topographical..	Postgraduate...	Fourth-year work	Total
	Primary..	Advanced.	First year....	Second year....	Third year....	Special...					
Fall.....	204	3	62	.....	53	4	21	.....	7	.....	354
Winter.....	17	4	104	79	1	6	1	77	6	.....	295
Spring.....	16	3	44	26	79	2	56	77	4	.....	327
Totals.....	247	10	210	105	133	12	78	154	17	.....	976

1897-'98.

Fall.....	319	7	93	.....	.....	8	7	.....	5	47	486
Winter.....	234	13	167	61	14	4	.....	4	7	.....	504
Spring.....	131	8	43	29	61	4	1	2	4	1	284
Totals.....	684	28	303	90	75	16	8	6	16	48	1,274

Of these classes, those in primary free-hand, first-year mechanical and third-year mechanical worked but half a term, or its equivalent. The students in topographical drawing worked on afternoons and Mondays.

For a detailed report of the work of these classes, I refer you to my former reports and to the annual catalogs. Many of the finished plates were on exhibition in my class-rooms during commencement, and have undoubtedly been noticed by you.

The revision of the course in the fall of the present year has increased the work in my department by adding a term of home architecture for the students of the household economics course, and one term of free-hand drawing for the students of the first year, so that the division of the department into one of industrial art and one of graphics has left this department more than full work for one teacher, especially because of the lack of suitable text-books in several lines of our work. The existing text-books are either too elementary, or they are designed for institutions of university grade.

Of work outside the class-room, but directly in the interest of the College, I may mention my attendance for the two years at seven farmers' institutes, a lecture before the schools of Riley, and an address before the Swiss-American society at Marysville. Since December, 1897, I have been local editor of the new monthly *Industrialist*. I have also prepared a series of illustrated biographical sketches on "The Makers of the Kansas State Agricultural College" for this magazine. In the spring of the present year, I drew for the Trans-Mississippi exhibition, at Omaha, a large map of Kansas, showing by colored circles the distribution and magnitude of the dairy industry of the state. I prepared an exhibit of forty-eight large photographs of the College for the same exhibition, and furnished the "copy" for the numerous half-tones which have appeared from time to time in the College publications. I also served as a member of several faculty committees, and as the chairman of the committee on assignments.

My chief auxiliary work has been the preparing of the drawings and specifications, and the contracting and superintending of the new Domestic Science hall, which work the Board of Regents has seen fit to intrust to me. The planning was commenced in March, 1897; the contract with the main contractor, Mr. E. P. Eversole, of Topeka, was signed in May; the work was commenced in June; the building received its roof in September; the heating, lighting, water and drainage systems were built in November and December; and the hall was ready for occupancy by the department of household economics on the first of January, 1898. The total cost of the building is about \$15,000, which left \$1000 for furniture and the most necessary equipments. The structure is built of Manhattan limestone; it is plastered with stucco; it is covered with tin shingle; and is very substantial in every respect—an ornament to the College campus. I may well say that my work as its architect was exacting. It consumed the whole of my vacation and every spare moment outside of my class hours; but it was done cheerfully for the College in which I have labored nearly a quarter of a century. I return my thanks for your appreciation of my efforts, expressed in a resolution dated December 16, 1897.

I am under obligation to your honorable body for securing for this department a legislative appropriation of \$300 for the year just closed. This appropriation has enabled me to procure needed furniture, models of geometric forms, a photographic camera, and a small number of plaster of Paris models of historic architectural forms. I am also under obligation to the Board for the division of my chair into a professorship of industrial art and one of graphics. The election to the new chair of Dr. Arnold Emch, an alumnus of this college, will relieve me of the care which a large staff of constantly changing assistants had.

caused in the past, and insure good work in the important branches of mathematical drawing.

I take this opportunity to mention the willing assistance in the work of instruction by several special students and postgraduates. In free-hand drawing I was ably assisted by Miss Phœbe E. Haines, Miss Bertha Kimball, Miss Ellen Norton, Miss Maud Gardiner, Miss Miriam Swingle, and Mr. Philip Fox. In graphics I had the effective assistance of Mr. Con M. Buck. All have worked for merely nominal remuneration and deserve much credit.

Respectfully submitted.

J. D. WALTERS.

MANHATTAN, June 30, 1898.

DEPARTMENT OF MATHEMATICS.

Report of D. E. Lantz,

Professor of Mathematics, and JOSEPHINE C. HARPER, Instructor in Mathematics.

To the Board of Regents:

GENTLEMEN—The following report covers the work done in the department of mathematics for the College year ending June 30, 1897:

CLASSES.	No. of divisions.	No. of ladies enrolled.	No. of gentlemen enrolled.	Total.
FALL TERM.				
Algebra, first term (Miss Harper).....	4	41	105	146
Algebra, first term (Mr. Christensen).....	1	9	24	33
Algebra, third term (Lantz).....	1	14	30	44
Geometry, plane (Miss Harper).....	1	14	19	33
Geometry, plane (Lantz).....	1	2	17	19
Trigonometry and surveying (Lantz).....	2	32	54	86
Analytic geometry (Lantz).....	1	1	4	5
Arithmetic (Mr. Morse).....	1	4	36	40
Arithmetic (Mr. Vincent).....	1	6	36	42
Surveying practice (Buck, Wheeler, Vincent).....	16	28	48	76
WINTER TERM.				
Algebra, second term (Miss Harper).....	4	56	112	168
Algebra, first term (Miss Harper).....	1	8	29	37
Algebra, first term (Lantz).....	1	6	39	45
Geometry, plane (Lantz).....	1	16	28	44
Geometry, solid (Lantz), six weeks.....	3	29	55	83
Differential calculus (Lantz).....	1	1	3	4
Arithmetic (Mr. Morse).....	1	7	38	45
Arithmetic (Mr. Vincent).....	1	3	19	22
SPRING TERM.				
Algebra, second term (Miss Harper).....	1	14	23	37
Algebra, second term (Lantz).....	1	7	21	28
Algebra, third term (Miss Harper).....	3	43	62	105
Algebra, third term (Lantz).....	1	8	18	26
Geometry, solid (Lantz).....	1	12	14	26
Integral calculus (Lantz).....	1	.....	3	3
Arithmetic (Mr. Vincent).....	1	8	11	19
Surveying practice (Lantz).....	1	.....	3	3

In addition to the classes outlined in the above statement, Professor Will instructed one division of the second-year class in plane ge-

ometry during the fall term. It will thus be seen that during the fall term the total enrollment of students in this department, counting no student twice, was about 470; in the winter term, 440; and in the spring term, 247.

All classes, except the classes in field surveying, met five times per week. Surveying practice classes met two hours per week. The total number of hours per week of instruction required was, in the fall term, 102; in the winter term, 60; and in the spring term, 47. Many of the classes have been too large for efficient work. There should have been three divisions of the class in trigonometry and surveying, and in the winter term one more division of both the second-term algebra and of the plane geometry.

The class in analytic geometry and calculus was made up of post-graduate students and two seniors who were in advance of their class. In the fall term, this class took Wentworth's Analytic Geometry through loci of the second order. Osborne's Calculus was used as a text-book in the winter and spring terms.

In teaching algebra, our main object has been to secure thoroughness in the elementary training given to the classes. The number of topics studied in the last term, from year to year, has depended upon the average ability of the students. This year the general theory of equations was omitted.

In geometry, in addition to the theorems of the text, the original exercises are used to give the student confidence in his own powers. This year the regular second-year class was able to take about half the original exercises in Wentworth's New Geometry. But the class which began geometry in the winter term, for lack of time, did much less original work, and, in the solid geometry, we were obliged to omit some valuable theorems in the text. The students who become members of irregular classes in mathematics lose much valuable drill.

In trigonometry and surveying the text-book has been followed, but much additional matter is furnished in the form of lectures and original problems and exercises. An introductory lecture upon "Cartesian Geometry" is followed by general definitions of the trigonometric functions. In surveying, a series of lectures supplementing and amplifying the points touched upon in the text was given. The field-work also was designed to illustrate trigonometric problems as well as to furnish a practical knowledge of surveying.

In all work of the department we have tried to develop as much as possible the latent ability of the student, and in the more advanced work to show the practical applications of his knowledge in industrial and other pursuits. Very respectfully submitted.

D. E. LANTZ, *Professor.*

JOSEPHINE C. HARPER, *Instructor.*

Report of Mary F. Winston,

Professor of Mathematics.

To the Board of Regents:

GENTLEMEN — I have the honor to submit the following statement of work done in the mathematical department during the academic year 1897-'98. The following table shows enrollment of classes under my immediate charge:

CLASSES.	Fall term.			Winter term.			Spring term.		
	Gen- tlemen.	Ladies.	Totals.	Gen- tlemen.	Ladies.	Totals.	Gen- tlemen.	Ladies.	Totals.
Algebra	28	18	46				16	28	38
Geometry (I)				21	9	30			
Solid geometry				53	48	101			
Geometry (II)							14	28	42
Trigonometry	45	23	68	17	4	21			
Surveying practice	41	19	60						
Analytical geometry	15	2	17				15	1	16
Differential calculus	1		1	3	1	4			
Integral calculus							3		3
Higher algebra (two hours weekly)				3		3			

The trigonometry of the fall term occupied ten weeks. The surveying practice was given in connection with this course, each student giving two hours per week to the work, and was conducted by fourth-year and postgraduate students. No surveying was given in connection with the trigonometry of the winter term.

The courses marked geometry I and geometry II were given according to the new course of study, in which two full terms are allotted to plane and solid geometry. Besides the instruction given by Miss Harper and myself, we have been obliged to employ a number of graduate students to teach the more elementary classes. The following table gives the number and enrollment of these classes, and the names of instructors:

CLASSES.	Fall term.			Winter term.			Spring term.		
	Gen- tlemen.	Ladies.	Totals.	Gen- tlemen.	Ladies.	Totals.	Gen- tlemen.	Ladies.	Totals.
ARITHMETIC.									
C. P. Hartley	31	9	40	23	6	29	20	7	27
R. S. Kellogg	40	11	51						
S. R. Vincent				21	5	26			
ALGEBRA.									
R. S. Kellogg	24	18	42	53	32	85	22	12	34
S. R. Vincent	29	6	35	33	9	42			
J. M. Westgate	24	13	37	29	12	41			
H. N. Whitford	33	13	46						

The apparatus of the department has been increased during the year by the addition of a mimeograph, which has proved very useful,

and which we expect to use still more the coming year, having the vacation during which to prepare the work. Besides this, we have devised, with the aid of the mechanical department, an apparatus for illustrating that part of the solid geometry which treats of the straight line and plane. It consists of a heavy wooden foundation and a number of planes of transparent celluloid. These are not formed into set models, but may be arranged at will, each piece being used in the construction of several figures. These, with the models of solid figures for which you have provided, will furnish us with sufficient means for illustrating the subject.

Respectfully submitted.

MARY F. WINSTON,

COLLEGE, June 30, 1898.

Professor of Mathematics.

Report of Josephine C. Harper,

Instructor in Mathematics.

To the Board of Regents:

GENTLEMEN—The following statement will show the enrollment of students in the classes under my instruction for the biennial period ending June 30, 1898:

CLASSES.	1896-'97.			1897-'98.		
	Gentlemen.	Ladies	Totals.	Gentlemen.	Ladies.	Totals.
FALL TERM.						
Geometry, one division.....	19	14	33			
Algebra, four divisions.....	105	41	146			
Geometry, three divisions.....				58	46	104
Algebra, one division.....				37	17	54
WINTER TERM.						
Algebra, four divisions.....	112	56	168			
Algebra, special.....	29	8	37			
Geometry, one division.....				14	9	23
Algebra, two divisions.....				40	34	74
Algebra, complete.....				7		7
SPRING TERM.						
Algebra, three divisions.....	62	43	105			
Algebra, one division, second term.....	23	14	37			
Geometry, one division.....				29	4	34
Algebra, two divisions, third term.....				43	29	72
Algebra, one division, second term.....				21	11	32
Algebra, advanced.....				3	4	7

In addition to class work, I have assisted in writing for the *Industrialist*, attended farmers' institutes, and served on committees of the faculty.

Respectfully submitted.

JOSEPHINE C. HARPER,

COLLEGE, June 30, 1898.

Instructor in Mathematics.

DEPARTMENT OF MECHANICS AND ENGINEERING.

Report of O. P. Hood,

Professor of Mechanics and Engineering.

To the Board of Regents:

GENTLEMEN—The work of this biennial period has been materially different from that of any previous period in the development of the mechanical department. During the past year the introduction of a mechanical-engineering course in the College greatly increased the duties and scope of the work undertaken by the department.

The work had grown into a manual-training department, forming a part of a general course. The shop work had a strong engineering trend. While still serving the same purpose for students in the general course, a more technical course for engineers offered an extended shop practice, viewed from a different standpoint and in connection with studies of a technical nature.

The new engineering course was well received by students, and can be said to be fairly started. An added instructor was made necessary by the increased work, and Mr. T. E. Layden, a graduate of Purdue University, has carried the work in machine design with credit.

Mr. Chas. Gundaker, as engineer, was succeeded by Mr. Robert Huddleson, from July 1 to January 1, 1898, when Mr. Jacob Lund received a deserved promotion.

In 1896-'97 classes handled by the department were as follows:

CLASSES.	Fall.	Win- ter.	Spring.
Woodwork	220	162	73
Blacksmithing	16	65	27
Foundry	6	7	17
Machine-shop	15	32	25
Mechanics		93	
Engineering		31	

The course shown in the catalog for the year 1897-'98 was adapted to the present classes, and the following studies were taught:

SUBJECT.	Class.	Fall.	Win- ter.	Spring.
Materials of construction	IV	9		
Hydraulics	III			8
Elementary mechanics			15	
Elementary mechanics			12	
Elementary applied mechanics	IV		8	
Applied mechanics	IV			9
Woodwork		220	153	51
Blacksmithing		37	69	43
Foundry		11	12	17
Machine-shop		33	29	33
Boiler room			2	
Apprentice work			6	

While the department is well equipped from a manual-training standpoint, there should be developed an engineering laboratory as supplementary to the shop work for the engineering students. Testing and measuring machines and typical motors of various forms should be provided. In each of the branches of ironwork there is pressure of numbers in some terms, and the added work of the engineering course will require an extension of the shop buildings. The addition of a new lathe and many small tools during the year has been a great help, yet still others are needed. The rearrangement of courses takes fourth-year students away from the wood shop, and a less favorable showing of completed work can be made in the department than heretofore.

The foreman has been frequently overloaded with work, and the reduction of numbers will in the end be an advantage. The blacksmith classes were filled as usual, and show the need of more room. Good work has been done in all departments. An attempt was made to manufacture six drill-presses by manufacturing methods, the result being creditable and of value. On January 1 an apprentice system was established, which opens the shop to young men anxious for practice in a good machine-shop, yet unable to enter a full College course. These apprentices work thirty hours per week, and soon become sufficiently skilful to raise the general average of the shop work, and to act as a stimulant to students in the regular course. Nine apprentices have been enrolled, and I consider the system a good one.

In bringing my work in this College to a close, I wish to publicly express appreciation of my assistants, who have been with me from seven to ten years. I refer to Foreman William L. House, Foreman Enos Harrold, and Engineer Jacob Lund. To the hearty, willing and efficient service of these helpers the successful development of the department is greatly indebted.

I must also express my thankfulness for the fact that conditions have been such as to allow a steady and a considerable growth of ideals in and for the department, of its influence and of its material equipment during my connection of twelve years with the work, and to express my thanks to Board and faculty, who have so helped in the work.

Very respectfully, O. P. HOOD.

COLLEGE, June 30, 1898.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS.

Report of H. G. Cavanaugh,

Professor of Military Science and Tactics.

No report was made, but the following figures have been supplied by the secretary of the College: Number of young men taking military drill in the course of the year 1896-'97, 351. Expenditures of the military department for 1896-'97:

Student labor.....	\$89 39
Equipment and repairs.....	24 75
Sundries.....	88 20
Total.....	\$202 34

Report of Schuyler Nichols,

Acting Commandant of Corps of Cadets.

To the Board of Regents:

GENTLEMEN—The following is the report of the military department for the year ending June 30, 1898:

Lieut. Ralph Harrison, professor of military science and tactics during this year, was called away by the government to serve in the war with Spain; that was before the end of the spring term, and he was unable to prepare a report. As senior cadet officer, I succeeded to the command of the battalion for the remainder of the year.

The total enrollment for the year is 384. So many cadets enlisted for service in the volunteer army that it became necessary to reduce the battalion from four companies to three companies.

The work of the department has been the same as for the three years just previous. The encampment which was provided for at the April meeting of the Board, and which had the hearty support of all connected with the department, was not held because tents could not be obtained. Those belonging to the state, upon which we were depending, were held for the use of our volunteer forces in the present war. The use of the pasture west of the main building as a drill ground has done much to facilitate the evolution of the battalion and to increase the efficiency of the drill.

The expenditures for the period have been as follows:

Uniforms.....	\$222 00
Lockers.....	72 72
Student labor.....	83 65
Equipment repairs.....	6 34
Sundries.....	9 21
Total.....	\$393 92

Respectfully submitted.

SCHUYLER NICHOLS,

Cadet Captain, Corps of Cadets, K. S. A. C.,

Acting Commandant.

COLLEGE, June 30, 1898.

DEPARTMENT OF MUSIC.

Report of A. B. Brown,

Professor of Music.

To the Board of Regents:

GENTLEMEN—I have the honor to submit the following report of of the department of music, vocal and instrumental, for the years 1896-'97 and 1897-'98:

CLASSES.	1896-'97.			1897-'98.		
	Ladies.	Gentlemen.	Totals.	Ladies.	Gentlemen.	Totals.
FALL TERM.						
Singing classes B (Tuesday and Friday).....	38	106	144	36	98	134
Singing class A (Thursday)	11	5	16	25	52	77
Piano and organ.....	46	4	50	43	7	50
Orchestral instruments, guitar, etc.....	15	21	36	26	43	69
Band instruments (B band).....	.....	31	31	.....	23	23
College orchestra.....	6	17	23	.....	19	30
College cadet band .....	.....	27	27	.....	23	23
Totals.....	.....	.....	327	.....	.....	402
WINTER TERM.						
Singing classes B (Tuesday and Friday).....	31	76	107	30	101	131
Singing class A (Thursday)	19	29	48	50	98	148
Piano and organ.....	35	14	49	54	12	66
Orchestral instruments, guitar, etc.....	17	51	68	36	70	106
Band instruments (B band).....	.....	26	26	.....	17	17
College orchestra.....	8	21	29	10	22	32
College cadet band .....	.....	28	28	.....	31	31
Totals.....	.....	.....	355	.....	.....	531
SPRING TERM.						
Singing classes B (Tuesday and Friday).....	19	25	44	31	37	68
Singing class A (Thursday)	9	21	30	21	23	44
Piano and organ.....	24	10	34	47	8	55
Orchestral instruments, guitar, etc.....	23	32	55	33	34	67
Band instruments (B band).....	.....	6	6	.....	11	11
College orchestra.....	7	18	25	10	23	33
College cadet band .....	.....	21	21	.....	27	27
Totals.....	.....	.....	215	.....	.....	305

With the largely increased enrollment of the last year in the musical department, comes an urgent demand for greater facilities, viz., an increase in the number of instruments, rooms for practice, and teaching force. We are pleased to know that the needs of the department, in these respects, are to be partially met by the assignment of more and pleasanter rooms in the new Domestic Science hall and the main building; also, by the addition of one new and excellent piano for the office, which will be greatly appreciated by the department, especially by the piano pupils.

Pupils assigned to instrumental music receive weekly instruction;

those who take it as an industrial are required to practice at least one period—fifty minutes—per day, at the time and place assigned; those who take it as an extra are expected to practice as much, but at time and place most convenient.

The instruction in this department includes a knowledge of the instruments and their parts; how to care for and tune the same; a correct and systematic method in technical drill; such attention to harmony, analysis and phrasing as will enable the pupil to take up advanced studies and solo work to advantage. When the pupil is sufficiently advanced, musical composition is introduced as a part of the work, and such amount is given as is compatible with the time of the pupil.

Pupils taking vocal music are assigned to one or more of the classes which meet on Tuesday, fourth hour in the forenoon, and on Thursday and Friday at 1:30 o'clock P. M. For special occasions, quartets, octets, etc., are organized by selecting members from the above classes.

Instruction in this department, class B (elementary), includes a knowledge of the vocal instrument, how to use and care for the same; sound, illustrated by monochord, siren, and other apparatus; pitch, scale and chord relation; rhythm, accent, value, and measure. Tonic sol-fa, syllabic and clef notations are analyzed and compared. Drill is given in transposition and modulation, with exercises in sight-reading in the above notations by letters, numerals, syllables, and words. Class work (advanced) reviews briefly the elementary work of class B, with additional exercises in sight-reading for training eye and ear, and a careful study, in style and expression, of selections, sacred and secular, interspersed with solo and quartet singing, with and without instrumental accompaniment.

Pupils who are sufficiently advanced to join the College orchestra, which has its rehearsals on Thursday afternoons, or the College cadet band, which practices in connection with the military drill, may become members by assignment. The purpose of the above rehearsals is to secure an intelligent conception of the work to be studied, develop and cultivate the proper rhythmic feeling, and by careful drill attain the skill, unity of thought and action so essential to the proper expression of the emotions.

In addition to my regular class work, as a member of the committee on public exercises and social and literary entertainments, much time has been given to the preparation of the musical parts of the several programs. I have assisted the College societies in the preparation of their music for annual exhibitions, special and joint sessions, and the fourth-year classes in the preparation of their original music for class-day and commencement exercises, furnished one or

more selections of music for the Saturday afternoon lectures and rhetorical exercises, and, as a member, assisted in the work of the assignment committee.

The department has furnished music—vocal, piano, orchestral, and band—for the weekly course of lectures, rhetorical, College socials, the exercises of commencement day and week, the inspection ceremonies and public military parade of the College cadets, and for all the other College exercises of public and general interest. In the above work, Miss Lorena M. Helder and Robert H. Brown have rendered efficient assistance.

Respectfully submitted. A. B. BROWN, *Professor of Music*.

COLLEGE, June 30, 1898.

DEPARTMENT OF ORATORY.

Report of Fredric A. Metcalf,

Professor of Oratory.

To the Board of Regents:

GENTLEMEN—The following report of the department of oratory, including the calisthenic work for ladies, is respectfully submitted:

In accordance with my appointment to the newly established chair, I entered upon my work at the beginning of the school year, in September, 1897.

Previously the work called rhetorical had been divided among several instructors, none of whom had made a specialty of oratorical work. Neither was there a department in the College devoted to this specialty. Consequently the standard of oratorical work was not high, and such training hardly had a place in the curriculum. The question confronting me was, first, to make a definite place in the course for my department, and then to formulate such a system of work as should accomplish the utmost good possible for the students in the allotted time. In the reconstruction of the course of study the oratorical work was given a definite place.

The aim of the department is to produce logical and effective thinkers and speakers.

All true education must ultimate in manhood and womanhood. No amount of technical training can take the place, as a working force in the world, of ideals and fixed, lofty purposes; while with these, and ever holding them plainly in view, technical training may be made to develop and round out the embryo of a noble and useful life. It is with these and similar ideals in view that the work of the new department was begun, and has been carried on throughout the year.

During the fall term, the old plan as to the number of hours was adhered to. Each pupil in the school met in class for drill work once each week. The first-year class was divided into four divisions, the second-year class into three, the third and fourth into two, each of these sections meeting me in class once a week. In addition to this, two special classes for advanced students (fourth years and post-graduates) were conducted by me throughout the term, each meeting once a week.

The class-room work included physical culture, voice culture, and rendering, together with lectures upon the theory of the work and its practical application to life.

Physical Culture.—Recognizing the body as the natural instrument of expression, through which the soul is enabled to reveal its best thoughts, feelings and purposes to other souls; and knowing also that all bodily restrictions and limitations prevent the perfect expression of the spirit, the class work has been made to include, at each lesson, drill upon exercises designed to produce in the body health, strength, grace, and response to mental and spiritual states; also to cultivate correct, healthful attitudes and movements, including the elements of gesture. Such personal suggestions as the time would allow have also been made.

Voice Culture.—The voice is almost a part of the body, inasmuch as it is dependent for its use, effectiveness and beauty upon bodily conditions. It has long been known by students of psychology that each mental state will produce upon the physical organism a corresponding physical effect. In order that the highest and most subtle mental states may be perfectly revealed through the voice, all the vocal tubes and cavities must be free, and the nerve centers and muscles directly concerned in voice production must be in normal condition, and under perfect control of the mind.

To furnish, as perfectly as possible, these conditions, a system of vocal culture or voice exercises has been established, and daily drill was taken upon them for the purpose of developing in the voice freedom, flexibility, volume, and harmony, and, by bringing before the imagination right objects of thought, to teach the voice to respond quickly to the various mental states which produce these outward effects.

Rendering.—The highest use of the body and the voice is to truly suggest the highest thoughts, feelings and purposes of the soul. There are many ways in which this may be done; as, for instance, in music, poetry, or painting. The highest and most perfect means by which the soul may express itself through the body is, however, by means of speech, as in conversation or oratory.

The work in rendering, as the above is called in our course, consists of daily drill on such selections as have been previously mentioned. In the class-room, selections from the standard and classical English authors, arranged in the natural order of the mind's unfoldment, were used as practice exercises in encouraging the students to think and to express the best thoughts of the best minds. In this way, courage, self-command, definite thought while on the feet before an audience, freedom of movement in expression, and many other powers of value to the student throughout his life in whatever line he may choose to move, have, it is believed, been to some extent developed.

The foregoing three courses, together with short lectures and talks upon the principles and theory of the work, constitute the regular class work for the fall term.

During the fall term, also, the second- and third-year students were required to hand in seven essays each.

On Saturday afternoons of this term, alternating with the chapel lectures, the third-year students appeared in declamation on the chapel platform before the whole school. Each public appearance was preceded by three rehearsals.

In the winter term, the adaptation of the new courses to the old went into effect, bringing about a rearrangement in the classes, the first-year, third-year and fourth-year students now coming to me.

The first-year and third-year work was along the same line as that given the first years during the fall term. The third years, during most of the term, had two hours per week in class devoted to the study and practice of Bell's Visible Speech and Vocal Physiology, a scientific exposition of the laws of sound as applied to the English language, giving the exact sound of each English element of speech, and teaching the right use of the dictionary and diacritical marks. They also wrote in the winter term one essay each week.

During this term, the fourth-year students met me once a week for class drill.

The chapel speaking, by members of the third- and fourth-year classes, came in the winter term on Saturday afternoons, alternating with the lectures and the preparation for it was the same as for the declamation in the preceding term. During this term, and also in the third, although no provision was made by the Board for an assistant, I was obliged to call upon Mrs. Metcalf, both at the College and at home, for assistance, her services being donated.

In the third term, the second-year students met daily in class. One division of fourth years appeared weekly in chapel. The oversight of the fourth-year graduating theses also fell to me. The second years handed in one essay each week.

Some writing for the *Industrialist* has been done by me during the year, and Mrs. Metcalf and myself have also given, in a number of places, and before several important educational associations, recitals, which, it is believed, helped to bring the College, as well as the department, into favorable notice.

Much time has been given during the school year in preparing students for various public exercises, such as the society annuals, class-day exercises, etc.

Summary of work in oratorical department, by terms, for the year 1897-'98:

Course.	Term.	Year.	Ladies.	Gen- tlemen.	Total.	No. of di- visions.	Hours per week.
Class drill.....	Fall.....	1	96	191	287	4	1
".....	".....	2	52	84	136	3	1
".....	".....	3	20	45	65	2	1
".....	".....	4	33	39	72	2	1
".....	".....	Spec'l	15	5	20	2	1
		Totals	216	364	580		
Class drill.....	Winter...	1	91	112	203	2	3
".....	".....	3	32	35	67	2	5
".....	".....	4	30	38	68	2	1
		Totals	153	185	338		
Vocal physiology.....	Winter...	3	31	26	57	2	{ 1'st hlf. term.
Class drill.....	Spring....	2	42	41	83	3	5
Theses.....	".....	4	33	35	68		
Chapel speaking*.....	All the yr.	3	28	44	72	7	
		4	32	34	66	7	

*The third-year students appeared twice during the year in chapel, once in declamation and once in an original part. The fourth-year students appeared once during the year, in an original part.

Needs of the Department.—For the coming year, assistance for three hours per day has been allowed. While this will afford a measure of relief, the growth of the department will soon demand a skilled instructor on full time.

Respectfully yours,

FREDRIC A. METCALF,

COLLEGE, June 30, 1898.

Professor of Oratory.

Calisthenics.

Report of F. A. METCALF, Chairman of Athletic Committee, and WINNIFREDE W. METCALF, Instructor in Calisthenics.

The professor of oratory has, at the request of the president of the College, supervised the work in calisthenics during the past year. Since the first two weeks of the school year, a class of young ladies, varying from twenty-five to fifty in number, has had daily instruction in calisthenics and physical culture, under the personal direction of

Mrs. Metcalf, who was engaged for this purpose. This class has met for forty minutes each morning, beginning at 7:50. The instruction has consisted of daily drill in the following:

First, the Emerson system of physical culture. This consists entirely of movements of the body without the use of apparatus, and is the same system taught in the oratory classes, except that here much more thorough drill is given, and opportunity is afforded for personal criticism and practice. The aims in this work are health, grace, and responsiveness to the soul, the grand purpose being to teach the body willingly and truly to obey the highest behests of the spirit.

The second part of the work consists of the "Barnjum Bar Bell Drill," a series of graceful, strengthening and interesting exercises with bar bells, having in mind the same general purposes as the preceding system.

The third division of this department consisted of responsive exercises in physical culture, and some work in posing and tableaux.

From time to time both of us have given the class practical talks on ideals of life, health, hygiene, and the laws underlying the true development and use of the body; also, upon the relation between mind and body.

Among the students of this College generally there is patent need for work of this kind, and it is most desirable that some adequate means be provided by which the young ladies of the College shall all have physical work throughout the year.

A ladies' gynasium is most sadly needed. Such a place, properly equipped, and under a competent instructor, would add at least fifty per cent. to the physical and mental power of our young lady students, and send out many more strong, healthy women into the world.

The need of physical education is by no means confined to our young women. Young men need it as much; but their need is, in part, supplied by the required military drill. The students who have taken this course have manifested much enthusiasm, and, with one accord, testify to the benefits derived from it; teachers in other departments have also remarked upon the improvement in the young ladies in the calisthenics class.

FREDRIC A. METCALF,

Chairman Athletic Committee.

WINNIFREDE W. METCALF,

Instructor in Calisthenics.

COLLEGE, June 30, 1898.

DEPARTMENT OF PHYSICS.

Report of E. R. Nichols,

Professor of Physics.

To the Board of Regents:

GENTLEMEN—The following table shows the class-room work done by me the past two years:

Term.	Hour.	SUBJECTS.	Students.
Fall, 1896.....	2	Advanced physics.....	28
	3	Advanced physics.....	29
	4	Elementary physics.....	49
Winter, 1897.....	2	Elementary physics.....	54
	3	Elementary physics.....	56
	4	Advanced physics.....	57
Spring, 1897.....	2	Elementary physics.....	29
	3	Elementary physics.....	39
Fall, 1897.....	1	Postgraduate physics.....	3
	2	Elementary physics.....	52
	3	Advanced physics.....	33
	4	Advanced physics.....	38
Winter, 1898.....	1	Elementary physics.....	57
	2	Elementary physics.....	57
First half.....	3	Advanced physics.....	31
Second half.....	3	Advanced physics.....	36
	4	Postgraduate physics.....	3
Spring, 1898.....	1	Elementary physics.....	29
	2	Elementary physics.....	37
	3	Advanced physics.....	9
	4	Postgraduate physics.....	4

Aside from regular teaching, I have made the meteorological observations, and prepared a monthly summary for publication in the *Industrialist*.

The expense and care of the electric bells and telephones connecting the various buildings naturally fall to this department. Faculty meetings, committees and farmers' institutes have taken a portion of time.

The department needs a building with the following rooms: A lecture-room, laboratory for advanced work, laboratory for elementary work, apparatus room, private laboratory, office, photometer room, battery room, meteorological room, preparation room, and repair room. The need of these is so apparent that no arguments need be given. Three terms of physics are required in all courses, one in the first year and two in the fourth. This means over 400 students each year that must take some one else's statement of facts instead of being able to investigate for themselves, and this in an institution where manual training is one of the chief features.

Respectfully,

ERNEST R. NICHOLS,

COLLEGE, June 30, 1898.

Professor of Physics.

DEPARTMENT OF VETERINARY SCIENCE.

Report of N. S. Mayo,

Professor of Physiology and Veterinary Science.

To the Board of Regents:

GENTLEMEN—The following report of the department of veterinary science and physiology for the year ending June 30, 1897, is respectfully submitted. Instruction in human anatomy and physiology and in veterinary science has been as follows:

During the fall term, fifty-six students in anatomy and physiology, in two divisions; and in the winter term, a class of thirteen in anatomy and physiology, and a class of thirty-three young men in veterinary science, in one division. Instruction in anatomy and physiology was given by text-book, lectures, and the use of models, charts, and specimens. In veterinary science, instruction was given by lectures, aided by the use of healthy and diseased specimens, models, charts, and living animals. The veterinary museum has been increased by about thirty-five specimens, illustrating diseases and anatomical proportions.

The correspondence of the department has greatly increased. I have also conducted a department in the *Kansas Farmer*, where inquiries regarding sick and injured stock have been answered. The time required for the correspondence of the department is about one day per week.

Much time has been devoted to the investigation of animal diseases in the Experiment Station. Two bulletins have been issued, one on the "Corn-stalk Disease of Cattle," and one treating of "Texas Itch, Blackleg, Tuberculosis and Texas Fever of Cattle."

In response to the requests from the State Live-Stock Sanitary Commission, I have made four trips to different parts of the state, to give advice regarding ailing animals.

I have lectured before farmers' institutes and granges, written for the *Industrialist*, taken part in faculty meetings, and served on faculty committees.

I have had no assistance, except when I was necessarily absent from College, when I have arranged work for classes that could be left in charge of a postgraduate student.

NELSON S. MAYO,

Professor of Physiology and Veterinary Science.

COLLEGE, June 30, 1897.

Report of Paul Fischer,

Professor of Veterinary Science and Biology.

During the year beginning September 1, 1897, and ending June 30, 1898, the following work has been done in my department:

In the College, during the fall term, instruction was given to eighty-eight students (two classes) in physiology and zoölogy; during the winter term, a class of twenty students in comparative anatomy, a special class of six students in dairy bacteriology, and the same number in veterinary science; and during the spring term, 105 students (two classes) in physiology, and a class of six students in veterinary science, received instruction. During each term I instructed from two to four special students in zoölogy, advanced veterinary science, and histology.

In physiology, the instruction consisted of recitations from a textbook and lectures. All other subjects were taught by lectures. Wherever practicable, illustrations and laboratory work were resorted to. The combining, last year, of the work of the professor of veterinary science and a large part of the work of the former professor of zoölogy, together with the recent changes made in the courses of study, has considerably increased the work of this department. The number of subjects taught has been increased from three (veterinary science, physiology, and zöology) to seven (hygiene of farm animals, anatomy and physiology, biology, agricultural bacteriology, comparative anatomy, veterinary science, and histology). This brings with it a material increase of the work demanded of this department, and makes additional instructing force an absolute necessity.

Again, subjects like physiology, zoölogy, bacteriology, anatomy, and similar studies in natural science, can hardly be pursued with profit without good laboratory facilities. These are almost entirely wanting. I would most urgently ask you to provide for these facilities as soon as possible.

Nothing short of a separate building, or large apartments in some other building, equipped with proper class-rooms, laboratories with tables and microscopes, a dissecting room for the large domesticated animals, a demonstration table with the necessary apparatus for demonstrations in physiology, and other minor instruments, would suffice. Such a plant could be erected and equipped for about \$30,000. The creation of an additional chair, or at least an assistant professorship, would be necessitated with this, but additional arguments could be cited in favor of this last change.

Since the office of state veterinarian has been abolished by a recent act of the legislature, the College veterinarian has been placed

at the call of the state Live-Stock Sanitary Commission. While this work is very important, interesting, and instructive, it requires so much time that it not only seriously hampers important work that is being carried on in the Experiment Station, but in fact it makes some work absolutely impossible; and again, by being called away at unexpected times, work already in progress is interrupted, and oftentimes the results of the labor of a long continued previous period of observation and investigation are made useless.

During the last year of ten months I was called away for a total period of thirty-two days, or nearly one-eighth of my entire time. Nine days, or more than three per cent. of my entire time, were spent at farmers' institutes. This makes a total of forty-one days, or one-sixth of my time, spent away from regular College and Station duties. The student suffers from this, and the experimental work is affected in quality.

The creation of an associate or assistant professorship in this department would materially if not entirely overcome this difficulty. For many reasons it is desirable that the state veterinary work should be done in connection with or by the College. The Station could in that way keep in closer touch with a knowledge of the sanitary condition of Kansas live stock, and thus be enabled to do better work, or at least the work best suited for immediate and practical purposes. Much work in the veterinary department must, however, of necessity, be of such a character that it cannot yield immediate results.

If the additional chair above referred to were created, all this work could be done by this department of the College. The cost would be about that of a regular professorship—less than \$2000. The cost of the last state veterinarian, who had no connection with the College nor Station, was perhaps double this amount. Whether or not the live-stock interests of the state can afford to spend such a sum of money for the maintenance of scientific veterinary services for its sanitary commission or not, can perhaps be answered by referring to the latest figures on the respective values of strictly agricultural products as compared with strictly animal products of Kansas during the last ten years.

According to Secretary Coburn's report, the total value of agricultural and horticultural products combined, for the last twenty years, is \$1,765,470,188; for live-stock products, it was \$716,591,563, or nearly one-half as much as for all agricultural and horticultural products combined, and nearly twice as much as the entire wheat crop. The value of dairy products alone amounts to nearly five million dollars annually for the last ten years, and over five million dollars for 1897. These figures, of course, do not include the 100 million dollars invested in live stock alone.

If we consider but for a moment the important relation that exists between the health of man and the health of the animals whose products he consumes as food, not to mention the enormous losses of live stock of all kinds through easily preventable diseases (losses that run into the hundred thousands), it will require no further argument to be convinced of the importance of fostering this neglected science of veterinary medicine and sanitary police.

As to actual work already accomplished in the Experiment Station during the past year, I beg to make the following report:

During the fall term, or second quarter of the year 1897-'98, most of my time was spent in performing duties relating to the extermination of tuberculosis from the College live stock. The tuberculin test has been repeatedly applied. *Post mortem* examinations were made, to verify the diagnosis on reacting animals. In all, three herds (ninety-five animals) have been tested at as many different times. In the first two herds tuberculous animals were found; the last herd of fifteen animals proved to be entirely free from reacting animals. According to this, no case of tuberculosis has been observed on the College farm since March 10, 1898. The entire barn was disinfected with corrosive sublimate and sulphur fumes. Slaughter-house inspection for nearly 100 pigs consumed much time. Numerous cases of disease and accidents among College farm animals were attended and prescribed for. An outbreak of panaritium among the dairy herd required a good deal of attention on my part. Some cattle were dehorned and minor operations on other animals were performed.

Experiments were carried on along the following lines:

1. Mastitis and stringy milk in cows.
2. An infectious disease of the genital organs of yearling heifers near Blue Rapids was studied, and a remedy was found. Experiments on this disease are still in progress.
3. Experiments with roup in poultry; gratifying results already obtained.
4. Tuberculin tests.
5. A bulletin on bovine tuberculosis (bulletin 79) was published.
6. Experiments to determine efficacy of sulphur fumes for disinfecting barns.
7. Equipping a laboratory for the manufacture of blackleg protective virus for distribution among farmers.
8. Experiments with rabies in horses.
9. Protective inoculation against swine-plague. This is probably the most important work taken up.
10. Work begun in the bacteriological line is the bacteriological analysis of milk, quantitative and qualitative, and experiments with the keeping qualities of milk.

11. Editing a weekly veterinary column for the *Kansas Farmer*.
12. Writing articles on blackleg, tuberculosis, abortion, etc., for county newspapers and Kansas State Live-Stock Sanitary Commission.
13. Answering by letter numerous inquiries by private individuals and letters forwarded by the secretary of the Live-Stock Sanitary Commission.

I have written articles for the *Industrialist*, served on faculty committees as chairman and otherwise, and, with the assistance of Mr. C. W. Pape, have performed the duties of curator of the College museum.

Respectfully submitted.

PAUL FISCHER.

COLLEGE, June 30, 1898.

PRINTING DEPARTMENT.

Report of J. S. C. Thompson,

Superintendent of Printing.

To the Board of Regents:

GENTLEMEN — The printing department has just closed a prosperous and pleasant year. The attendance has been large, classes well divided to suit the department's somewhat-cramped quarters and limited equipment, and relations with students most pleasant, there being no friction whatever, to the best of my recollection.

The attendance was, for the fall term, 54; for the winter term, 102; for the spring term, 57; total, counting some twice, 213.

The *Industrialist* has been printed, in regular editions varying from 2200 to 2500 copies, with an extra edition of 10,000 at the beginning of the year. The cost of the paper is shown by the balance in the appended financial statement, less \$340.32 decrease in inventory, made at the request of your Board; the actual expense of the paper for the year being \$573.46. The reduced cost of the publication over some other years is due to the considerable quantity of work done by students during class hours, made possible by the arrangement of classes previously mentioned.

FINANCIAL STATEMENT.

RECEIPTS.		EXPENDITURES.	
Department transfers	\$383 65	Paper	\$383 82
Cash	131 63	Labor	553 89
Balance, expense	913 78	Freight	52 33
Total	\$1,429 06	Postage	52 41
		Ink, press and office supplies	38 19
		Department transfers	8 10
		Inventory decrease	340 32
		Total	\$1,429 06

Respectfully submitted.

COLLEGE, June 30, 1897.

J. S. C. THOMPSON,

Superintendent of Printing.

Report of C. S. Davis,

Superintendent of Printing.

To the Board of Regents:

GENTLEMEN—The prosperity which has come to the College during the past year has been shared in an augmented degree by the printing department. The enrollment in the printing industrial classes during the year was as follows: Fall term, 72; winter term, 88; spring term, 69; total, 229. Deducting 100 names counted twice, gives a net enrollment of 129 different students (24 ladies, 105 gentlemen) during the year. The total attendance of these was 9744 hours, being an average of a trifle over 75½ hours per student.

The amount of room occupied by the department at the beginning of the year was very inadequate for the proper accommodation of so large an attendance, but by reason of the completion of the new Domestic Science building, at the close of the fall term, and the consequent surrender of the old basement kitchen to us, we were enabled to occupy the rooms on both sides of the basement hall, thereby doubling the department's capacity. The former kitchen laboratory then became a composing room; and the former composing room became a drying and folding room, with the incidental minor changes. It affords much pleasure to say that the new arrangement was preliminary to a marked improvement in departmental affairs. I am confident that future good results will be even more evident by reason of the additional facilities which the increase of room allowed.

Special editions of *The Industrialist* were published July 15, August 16 (double numbers) and September 2, 1897, aggregating 40,000 copies. Thirteen regular issues, with an average circulation of 2562 copies, were published preceding the change of form. The publication of the *Students' Herald* was undertaken at the beginning of the College year, at the instance of its managers, and the issue of thirty-eight numbers, with an average circulation of 663 copies, has been successfully and satisfactorily accomplished.

In accordance with the action of your Board at its October meeting, the form of *The Industrialist*, which, since its inception in 1875, had been issued as a weekly folio sheet, was changed in January last to that of a monthly magazine, with sixty-four as the minimum number of pages. The six issues, January to June, inclusive (exclusive of cover, but including full-page illustrative plates), comprise 438 pages, an average of 73. Their average circulation has been 2750 copies per month. Not the least of the good results accomplished by the change has been that of widening the range of practical work within the department, so that the formerly prevalent custom of un-

dertaking projects and devising forms merely for practice is now seldom necessary.

The cost of *The Industrialist*, in its different forms (sixteen issues of the weekly and six issues of the monthly), has been \$663.61.

The periodicals following have been regularly received, either in exchange for the *Industrialist* or in return for advertising space; and, as received, have been first carefully scanned for items relating to the College (to add to the executive scrap-book) and then promptly transferred to the library, day by day, there to be placed on file. The subscription prices of the 482 periodicals in this list foot up the neat sum of \$504.25.

KANSAS PUBLICATIONS.

Abilene, Evangelical Visitor.

“ Monitor.

“ School and Home.

Alma, Enterprise.

“ Signal.

Almena, Lantern.

Alton, Empire.

Altoona, Journal.

Americus, Greeting.

Anthony, Republican.

Argonia, Clipper.

Arkansas City, Democrat.

“ “ Dispatch.

“ “ Gate City Journal.

“ “ Republican Traveler.

Ashland, Clipper.

Atchison, Missouri Valley Farmer.

“ Midland.

Attic, Independent.

Atwood, Patriot.

“ Republican Citizen.

Augusta, Journal.

Baldwin, Baker Orange.

Baxter Springs, News.

Beattie, Eagle.

Belle Plaine, News.

Bern, Gazette.

Blue Mound, Sun.

Blue Rapids, Motor.

Bonner Springs, Wyandotte Chieftain.

Burden, Eagle.

Burlingame, Chronicle.

Burlington, Courier.

“ Jeffersonian.

“ Republican.

Caldwell, News.

Caney, Chronicle.

Canton, Champion.

Carbondale, Carbondalian.

Cawker City, Record.

Cedarvale, Commercial.

Chanute, Blade.

Chapman, Standard.

Cheney, Sentinel.

Cherryvale, News.

“ Populist.

Circleville, News.

Clay Center, Dispatch.

“ Times.

Clifton, News.

Clyde, Farmers' Voice.

“ Herald.

Coffeyville, Democrat.

“ Journal.

Coldwater, Western Star.

Colony, Free Press.

Columbus, Modern Light.

Concordia, Empire.

Conway Springs, Star.

Coolidge, Unmuzzled Truth.

Cottonwood Falls, Courant.

Council Grove, Republican.

Delphos, Republican.

Dillon, Republican.

Dighton, Journal.

Dodge City, Globe-Republican.

Douglas, Tribune.

Downs, Times.

Dunlap, Reflector.

Easton, Light.

Effingham, High School Bulletin.

El Dorado, Industrial Advocate.

Empire City, Journal.

Emporia, College Coyote.

“ College Life.

“ Times.

“ State Normal Monthly.

Eskridge, Star.

Eureka, Union.

Fairview, Courier.

Fort Scott, Lantern.

Fredonia, Alliance Herald.

Galena, Republican.

Galesburg, Enterprise.

Garden City, Imprint.

“ Sentinel.

Garnett, Agitator.

Gaylord, Herald.

Geneseo, Herald.

Girard, Press.

Glasco, Sun.

Goodland, Republic.

Great Bend, Beacon.

“ Register.

- Greenleaf, Sentinel.
 Greensburg, Signal.
 Grenola, Chief.
 Gypsum, News.
 Haddam, Clipper.
 Hanover, Democrat.
 Harper, Advocate.
 Hays City, Republican.
 Hazelton, Express.
 Holton, Recorder.
 " Signal.
 " Tribune.
 Howard, Citizen.
 Hoxie, Palladium.
 Humboldt, Union.
 Hutchinson, Saturday Bee.
 " Democrat.
 " Gazette.
 " Interior Herald.
 " Kansan.
 " School and Fireside.
 Independence, Populist.
 " Star and Kansan,
 " Tribune.
 Iola, Farmer's Friend.
 " Sentinel.
 Jamestown, Optimist.
 Jetmore, Republican.
 Jewell City, Republican.
 Johnson City, Journal.
 Junction City, Sentinel.
 " " Tribune.
 " " Union.
 Kirwin, Globe.
 Kinsley, County Schools.
 La Crosse, Chieftain.
 Lakin, Investigator.
 Lansing, News.
 Lawrence, Journal.
 " K. U. Quarterly.
 " Select Friend.
 Leavenworth, Home Record.
 " Times.
 Lebanon, Journal.
 Leon, Indicator.
 Leonardville, Monitor.
 Leoti, Standard.
 Le Roy, Reporter.
 " Suffrage Reveille.
 Lincoln, Beacon.
 " Republican.
 " Sentinel.
 Long Island, Leader.
 Louisburg, Herald.
 Lyndon, Current Remark.
 " Journal.
 Lyons, Eagle.
 " Republican.
 McCracken, Enterprise.
 McPherson, Democrat.
 " Opinion.
 " Republican.
 " Teacher and Student.
 Manhattan, Educator.
 Manhattan, Homestead.
 " Mercury.
 " Nationalist.
 " Republic.
 Mankato, Western Advocate.
 Marion, Times.
 Marysville, News.
 Meade, Globe.
 Melvern, Review.
 Meriden, Ledger.
 Miltonvale, Press.
 Minneapolis, Better Way.
 " Messenger.
 " Review.
 Moran, Herald.
 " Mercury.
 Mound City, Republican.
 " Torch of Liberty.
 Mound Valley, Herald.
 Mulvane, Record.
 Narka, News.
 Neodesha, Sun.
 Ness City, Echo.
 Netawaka, Herald.
 Newark, Record.
 Newton, Banner.
 " Journal.
 Norton, Champion.
 " Liberator.
 Nortonville, Herald.
 " News.
 Oberlin, Times.
 Olathe, Patron.
 " Star.
 Olsburg, Optic.
 Osage City, Public Opinion.
 Osawatomie, Globe.
 Oswego, Independent.
 Ottawa, Campus.
 " Chautauqua Assembly Herald.
 " High School Opinion.
 " Republican.
 Overbrook, Herald.
 Paola, Republican.
 Parkerville, News.
 Parsons, Eclipse.
 " Independent.
 " Palladium.
 " Sun, daily and weekly.
 Perry, Journal.
 Phillipsburg, Herald.
 Pittsburg, Kansan.
 Pratt, Union.
 Randolph, Enterprise.
 Republic City, News.
 Riley, Regent.
 Rossville, Times.
 Russell, Journal.
 " Reformer.
 Sabetha, Star.
 Salina, Herald.
 " Republican-Journal.
 " Union, daily and weekly.
 Scott City, Common School.

Sedan, Lance.
 Seneca, News.
 " Tribune.
 Severy, Severyite.
 Smith Center, Pioneer.
 Soldier, Clipper.
 Solomon, Sentinel.
 Sterling, Democrat.
 St. Mary's, Dial.
 " Star.
 Stockton, Record.
 Syracuse, Journal.
 " News.
 Tonganoxie, Sentinel,
 Topeka, Advocate and News.
 " Antrum.
 " Fulcrum.
 " Home Defender.
 " Home Finder.
 " State Journal.
 " Kansas Farmer.
 " New Woman.
 " Telegraph.
 " Temperance Monitor.
 " Washburn Reporter.
 " Western Poultry Breeder.

Topeka, Western School Journal.
 " Worker.
 Troy, Times.
 Turon, Weekly Press.
 Valley Falls, Farmers' Vindicator.
 " " New Era.
 Wakefield, Advertiser.
 Wamego, Agriculturist.
 " Times.
 Washington, Post-Register.
 Waterville, Telegraph.
 Wellington, Monitor-Press.
 " People's Voice.
 Wellsville, Weekly Globe.
 Westmoreland, Recorder.
 " Signal.
 Wheaton, Courier.
 White City, Register.
 Whitewater, Independent.
 Wichita, Kansas Commoner.
 " Southwestern Farmer.
 " Times.
 " Western Methodist.
 Williamsburg, Star.
 Wilson, Echo.
 Winfield, Tribune.

RECEIVED FROM OTHER STATES.

Akron, Ohio, Self Culture.
 Albany, N. Y., Country Gentleman.
 Baltimore, Md., Southern Farm Magazine.
 " " Sun, daily and weekly.
 Baltimore, Ohio, Budget.
 Bangor, Me., Industrial Journal.
 Bloomington, Ill., Public School Journal.
 Boston, Mass., Arena.
 " " Bulletin and Good Roads.
 " " Farm-Poultry.
 " " Homes.
 " " Literary World.
 " " Modern Methods.
 " " New England Farmer.
 " " " Florist.
 " " Our Dumb Animals.
 " " Our Grange Homes.
 " " Political Science Quarterly.
 " " Youth's Companion.
 Bozeman, Mont., College Exponent.
 Cambridge, Mass., Harvard Lampoon.
 Chicago, Ill., American Swineherd.
 " Caxton Caveat.
 " Daily World.
 " Electrical Engineering.
 " Express.
 " Facts and Fiction.
 " Farm and Home.
 " Farm, Field and Fireside.
 " Farmer.
 " Farmers' Review.
 " Farmers' Voice.
 " Gentleman Farmer.
 " Home Musical Journal.
 " Inland Printer.
 " Irrigation Age.
 " Live Stock Report.

Chicago, Ill., Light on Subject of Good Roads.
 " New Time.
 " Orange Judd Farmer.
 " Our Solicitor.
 " Prairie Farmer.
 " Printers' Album.
 " Public.
 " Record.
 " Social Democratic Herald.
 " School Economy (semiweekly).
 " Scroll.
 " Social Democrat.
 " Western Agriculturist.
 " Western Journal.
 " Western Rural.
 Cincinnati, O., Western Architect and Builder.
 " Journal of Cincinnati Society
 of Natural History.
 Cleveland, O., Scientific Machinist.
 Dayton, O., Farmers' Home.
 Delaware, O., College Transcript.
 Denver, Colo., Brightside.
 " " Cycling West.
 " " New Nation.
 Des Moines, Iowa, Poultry Farmer.
 " " Spirit of the West.
 " " Wallace's Farmer.
 Detroit, Mich., Free Press.
 Durham, N. H., College Monthly.
 Englewood, N. J., Seeds.
 Escondido, Cal., Rural Home.
 Evansville, Ind., Coming Events.
 Fort Atkinson, Wis., Hoard's Dairyman.
 Fort Collins, Colo., Collegian.
 Fort Worth, Texas, Stock and Farm Journal.
 Grand Junction, Mich., Gospel Trumpet.
 Greenins, Mich., N. A. Horticulturist.

- Guelph, Canada, O. A. C. Review.
Hartford, Conn., Traveler's Record.
Holyoke, Mass., Herald.
Houston, Texas, Daily Post.
Huntington, Ind., Farmer's Guide.
Indianapolis, Ind., Epitomist.
" " Farmer.
Irvington, N. Y., Cosmopolitan.
Jennings, La., Times.
Kansas City, Mo., Farm Magazine.
" " Illustrated Monthly.
" " Journal.
" " Labor Record.
" " Live-Stock Indicator.
" " Nautilus.
" " Packer.
" " Pointers.
" " Star.
Kirkville, Mo., Journal of Osteopathy.
" " Normal Message.
Kittrell, N. C., Strawberry Specialist.
Lansing, Mich., M. A. C. Record.
Las Cruces, N. M., Collegian.
Lexington, Mo., Central College Magazine.
" " W. M. A. Trumpeter.
London, Eng., Fabian News.
Los Angeles, Cal., Land of Sunshine.
" " Public Ownership Review.
Manchester, N. H., Mirror and Farmer.
Mount Holly Springs, Pa., Institute Monthly.
Milwaukee, Wis., Die Acker und Gartenbau-
Zeitung.
Minneapolis, Minn., Farm, Stock and Home.
" " Market Garden.
" " Viola Magazine.
Missoula, Mont., Fruit Growers.
Nashville, Tenn., Youths' Advocate.
Newark, N. J., Direct Legislation Record.
New York city, American Agriculturist.
" " American Creamery.
" " American Fabian.
" " Critic.
" " Criticism.
" " Delineator.
" " Electrical Review.
" " Farm and Fireside.
" " Field and Stream.
" " Financial Record.
" " Fireman's Herald.
" " F. Leslie's Popular Monthly.
" " Gentlewoman.
" " Good Housekeeping.
" " Gunton's Magazine.
" " Life and Health.
" " Mahatma.
" " McClure's Magazine.
" " Medical Record.
" " Mind.
" " Nation.
" " National Advocate.
" " National Stockman and
Farmer.
" " New Earth.
" " New Century.
New York city, Outing.
" " Penman's Art Journal.
" " Printers' Ink.
" " Produce Review and American
Creamery.
" " Public Opinion.
" " Publishers' Weekly.
" " Sanitarian.
" " Scientific American.
" " Solidarity.
" " Turf, Field and Farm.
" " Twentieth Century.
" " Universal Brotherhood.
" " Youth's Temperance Banner.
Oakland, Cal., Industry.
Oklahoma City, Okla., Farmer.
Omaha, Neb., Campbell's Soil Culture.
" " Hospodar.
" " Nebraska Farmer.
" " World-Herald.
Painesville, Ohio, Lake Erie Record.
Parksburg, Pa., Poultry Keeper.
Philadelphia, Pa., American.
" " Christian Standard.
" " City and State.
" " Ladies' Home Journal.
" " Practical Farmer.
" " Public Ledger.
" " Sugar Beet.
" " Table Talk.
Portland, Ore., Agriculturist.
Putnam, Colo., Planet.
" " Storrs' Lookout.
Quincy, Ill., Western Agriculturist and Live
Stock Journal.
Red Cloud, Neb., Farmer.
" " Nebraska and Kansas.
Rochester, N. Y., Journal of Applied Micro-
scopy.
Rochester, N. Y., Vick's Magazine.
Ruston, La., Industrialist.
Salt Lake City, Utah, Church and Farm.
Salisbury, N. C., Watchman.
Santa Rosa, Cal., Republican.
San Francisco, Cal., Free Society Library.
" " National Advocate.
" " Overland Monthly.
" " Star.
" " The Lowell.
Seranton, Pa., Home Study Magazine.
Shelbyville, Ill., Our Best Words.
Sioux Falls, S. D., Successful Farmer.
Springfield, Ill., Farmer Home.
Springfield, Mass., Good Housekeeping.
Springfield, Mo., Southwest.
Springfield, Ohio, Farm and Fireside.
" " Farm News.
St. Joseph, Mo., Busy Bee.
" " Western Fruit Grower.
" " News.
St. Louis, Mo., Altruist.
" " Farm Machinery.
St. Louis, Mo., Journal of Agriculture and
Mississippi Valley Democrat.

St. Louis, Mo., Modern Mexico.
 Terre Haute, Ind., Vaccination.
 " " Inland Educator.
 Tomah, Wis., Tatler.
 Toronto, Canada, Farming.
 Washington, D. C., Home Magazine.

Washington, D. C., Inventive Age.
 " " Inventive American.
 " " Journal of K. of L.
 " " Woman's Tribune.
 Woodward, Okla., Live-Stock Inspector.

The manuscript of the "Stylebook and Manual of Typography," authorized by your Board on the 11th instant for use as a text-book in this department, has been prepared and the work will shortly be issued. Respectfully submitted.

CHAS. S. DAVIS,

COLLEGE, June 30, 1898.

Superintendent.

SEWING DEPARTMENT.

Report of Elida E. Winchip,

Superintendent of Sewing.

To the Board of Regents:

GENTLEMEN — The following report of the sewing department for the year ending June 30, 1897, is respectfully submitted.

The enrollment of the classes is as follows :

Fall term	153
Winter term	109
Spring term	113

Miss Frisbie was reappointed my assistant, but at the end of two weeks resigned to accept a position in the agricultural college of South Dakota, when Miss Bertha Winchip was appointed to fill her place.

The classes were so large that it was thought best to divide the class of fourth years and postgraduates, and make two afternoon classes.

The following will show the expenditures of the department :

Assistant's salary	\$270 00
Sample books	4 00
Materials	40 96
Repairing machines and needles	7 50
Department bills	8 53
Inventory decrease	11 80
Total	\$342 79
Cash credits	13 30
Actual expense	\$329 49

Respectfully submitted.

ELIDA E. WINCHIP.

COLLEGE, June 30, 1897.

Report of Harriet Howell,

Superintendent of Sewing.

To the Board of Regents:

GENTLEMEN—The following report of the sewing department, for the school year of 1897-'98, is respectfully submitted:

Fall term: Morning classes, model work, 135 students; afternoon class, special work, 16 students.

Winter term: Morning classes, machine practice, and making undergarments, 65 students; afternoon class, dressmaking, 10 students.

Spring term: Morning classes, drafting and making unlined dresses, 46 students; afternoon class, dressmaking, 15 students.

The following statement shows the enrollment of students in classes under the instruction of Miss Helen H. High, my assistant, during the school year of 1897-'98:

Fall term: Assisted in the classes taught by myself.

Winter term: Morning classes, model work, 25 students; afternoon, assisted with my classes.

Spring term: Model work, 12 students; machine practice, making undergarments, 22 students.

The plan of the work has been entirely reorganized, and now consists of a carefully graded course of work, covering a period of two years. It is the aim of the department not only to teach the pupils how to sew but to establish habits of neatness, exactness, and self-reliance. Respectfully submitted. HARRIET HOWELL.

COLLEGE, June 30, 1898.

LIBRARY DEPARTMENT.

Report of Julia R. Pearce,

Librarian.

For 1896-'97, and for 1897-'98, as far as the end of the winter term, no report was made.

Report of Helen J. Wescott,

Librarian.

To the Board of Regents:

GENTLEMEN—The librarian takes pleasure in submitting the following report of the library for the three months ending June 30, during which it has been under her charge:

Out of the \$1000 appropriated by the state on July 1, 1897, for li-

brary books, there had been expended, in the nine months previous to April 1, but \$439.30. In the three months since then, it has been necessary to expend the remaining \$560.70.

In addition to the work of ordering, entering and cataloging the large number of volumes coming in so rapidly from this source, over 250 volumes returned from the state bindery and received from other sources have been entered and cataloged during this time.

Four hundred volumes have been prepared, listed, and shipped to the bindery from the library, during these three months.

This concentration of work that might well have occupied double the time into the space of three months, added to the natural increase of work at the end of the year, taking the inventory, etc., has, with the assistance available, obliged the incoming librarian to give close and constant attention to office business, and no time has been left in which to attend to the legitimate work of a librarian, *i. e.*, the mastering of the peculiar resources of the library, becoming acquainted with the special needs of the students, and the guiding of readers. It is hoped that during the ensuing year time will be found for this important part of the librarian's work.

There is a task of considerable magnitude, however, that it is desirable should be undertaken at once, to be completed as soon as possible.

It has been the custom in the library to pile up the miscellaneous pamphlets received through the mail on shelves in the library office, and when a large pile was accumulated to take them to the basement. Here an effort has been made to arrange them in order, but there is necessarily much confusion, as no list of any kind has been made, and the piles of miscellaneous pamphlets of which there is no record are not available for reference, nor in making up volumes for the bindery. The exact number of these pamphlets is not known, but an estimate of 14,000 is the best that could be arrived at in time for placing in this year's inventory.

As this number is more than two-thirds the total number of bound volumes in the library, and as no list of any kind is now in existence, it will be seen that the work of sorting, listing and marking pamphlets and labeling shelves, and preparing a complete card catalog that may be referred to as showing what is there, is a somewhat formidable one, but it will not become less so with the passage of time. In fact, the situation must constantly grow worse until this task is undertaken. Therefore it seems desirable that it be undertaken as soon as possible.

It has been planned to begin the preliminary work of sorting this summer, and the completion of the card catalog will extend over at least the whole of the ensuing year. If it should be thought wise to

have this work done, it will of course require more assistance in the library than would otherwise be necessary.

The need of adequate shelving in the basement is still felt, and, although some shelves have been added since the last report was made, it is still necessary to use shingle boxes for storing many of the pamphlets.

In the extreme pressure of work during the past three months, the need of a workroom has been most painfully felt. In the one small room called the office the work of entering and cataloging, and also of correspondence, has been carried on with great difficulty amid the clatter of typewriters, the stamping of volumes, etc. During the sessions of the library committee, it has been necessary to suspend all work, as this was the only available room for such meetings. The need of a separate office is felt every hour in the day.

It will be necessary either to increase the shelf room in the immediate future, or to suspend the growth of the library, as the shelves in most departments are now crowded. The effect of suspending the growth of the library of an educational institution such as this need hardly be commented upon. Therefore, the need for more shelf room seems imperative.

The funds available for the purchase of books have now been exhausted, and if the library is to keep in touch with the progress along the various lines of work of the institution, it will be necessary to provide funds for this purpose.

The need of adequate assistance can scarcely be too strongly emphasized. If the librarian is compelled to devote her time to the work of an assistant, the library is deprived to that extent of the more important services that should be rendered. This is the situation of this library at present.

Below will be found a summary of the inventories for the past two years:

	1897.	1898.
Books and pamphlets.....	\$30,059 63	\$32,219 13
Furniture.....	3,956 94	4,190 03
Catalog.....	2,738 25	2,822 50
Office furnishings.....	142 48	159 03
Supplies.....	13 55	23 24
Miscellaneous.....	195 94	233 69
Totals.....	\$37,106 79	\$40,647 62

Following is a list of the donations to the library for the past three months, and a list of the periodicals kept on file.

Respectfully submitted,
COLLEGE, June 30, 1898.

HELEN L. WESCOTT,
Librarian.

SCHEDULE A.—DONATIONS TO THE LIBRARY, APRIL 1 TO JUNE 30, 1898.

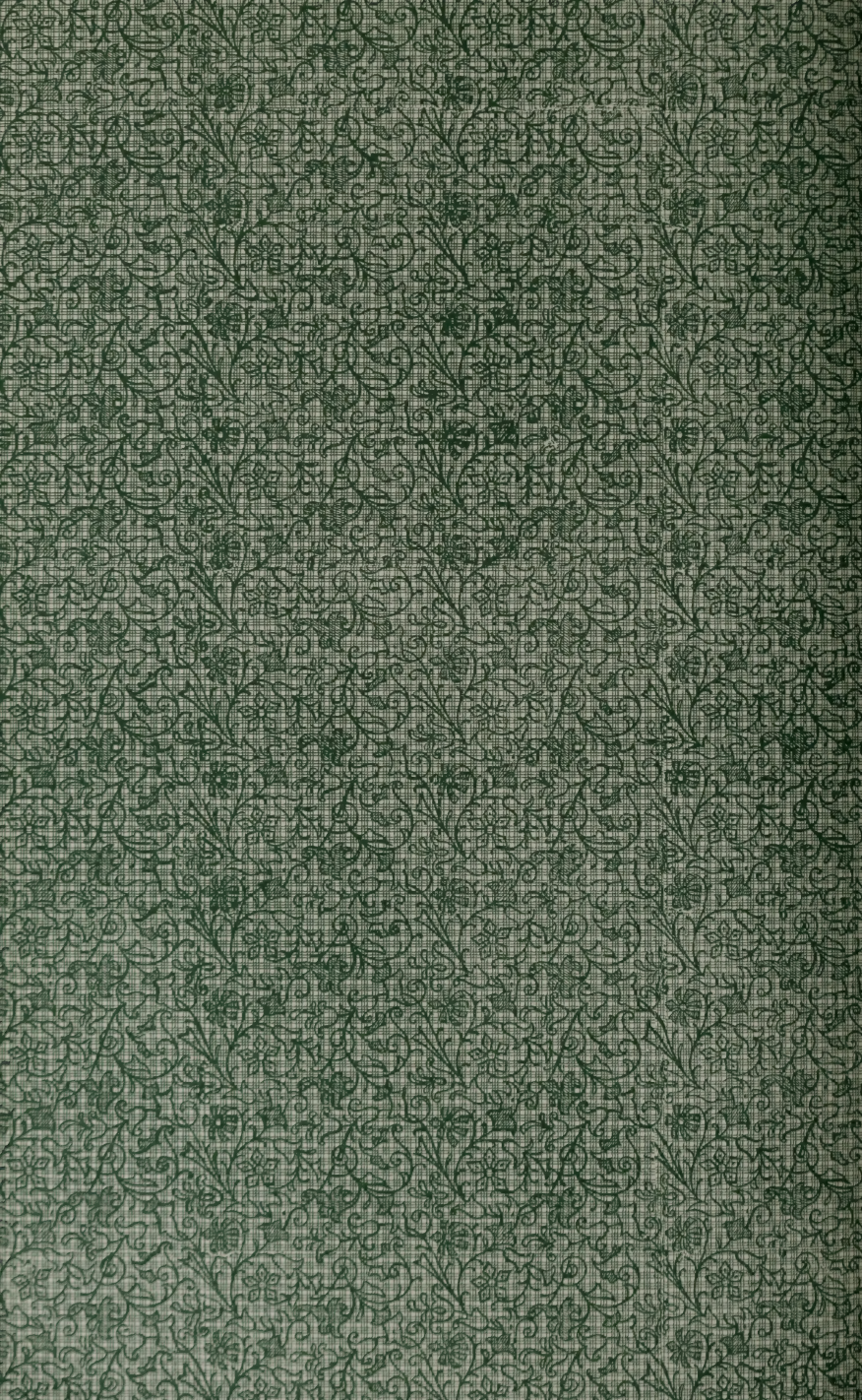
F. D. Coburn: The Beef Steer.
 W. H. Coleman: Natural Law in the Spiritual World.
 California Experiment Station: Report of Work of the Agricultural Station of the University.
 Experiment Station: Reports and Bulletins, as issued.
 F. V. Irish: American and British Authors.
 Kansas State Agricultural College: Masters' Theses, 1897.
 R. T. Nesbitt: Publication, Department of Agriculture of Georgia, 1897.
 New York Museum: Twelfth Report of State Entomologist, 1896.
 Prof. Frank Parsons: The World's Best Books; National Consolidation of Railways of the United States; Industrial Freedom; The Corporation Problem.
 David Ross: Illinois Coal Report; Bureau of Labor Report.
 Munn & Co.: Scientific American.
 New York University: Eightieth Annual Report, 1897.
 Helen J. Wescott: The Graphical Solution of Hydraulic Problems.
 Pres. T. E. Willard: The Domestic Sheep.
 Prof. J. T. Willard: Organic Chemistry.
 Wm. C. Lee: The Outlook.

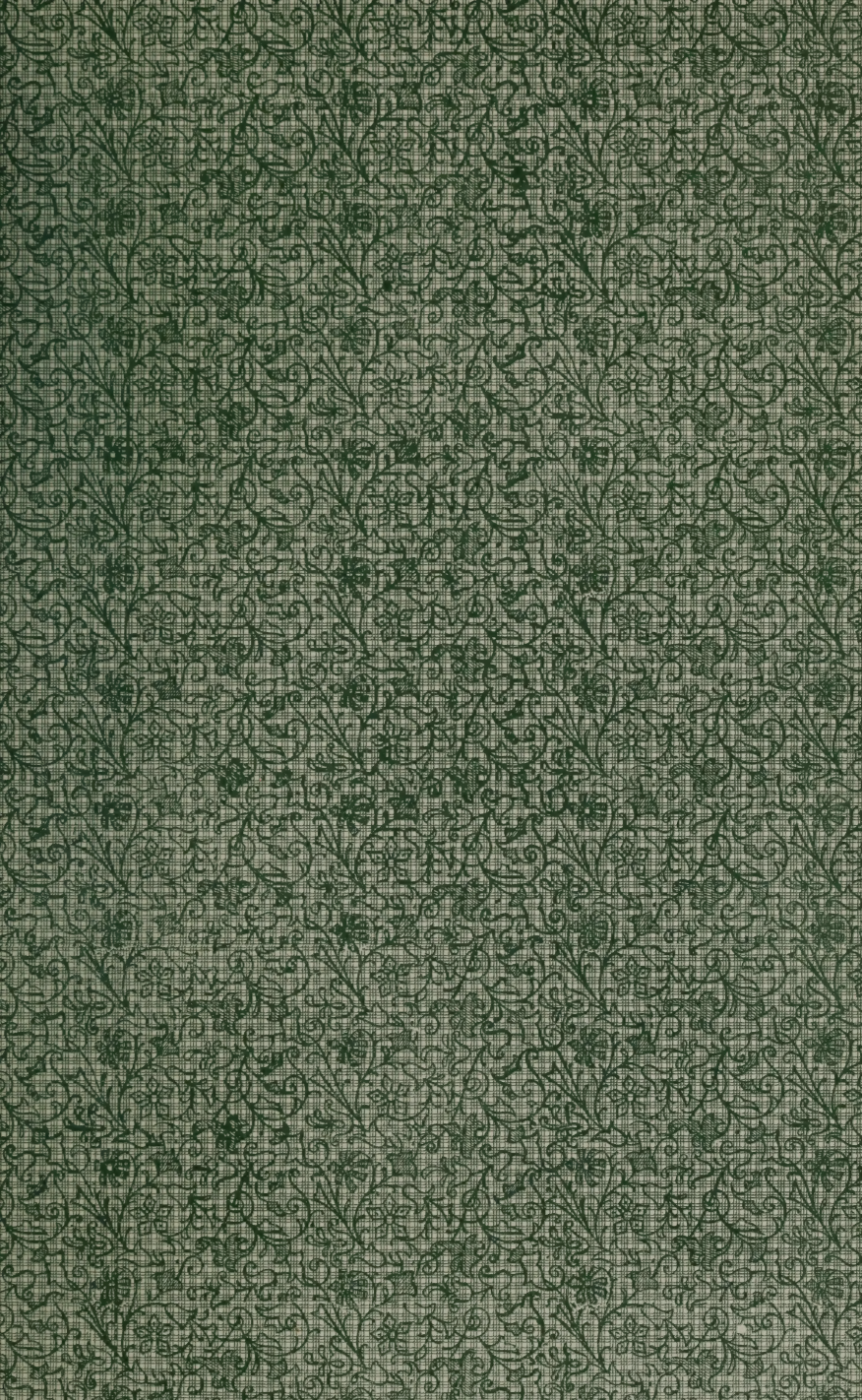
SCHEDULE B.

The periodicals in the following list have been on file in the library:

PURCHASED.

Agricultural Gazette, London.	Gardner's Chronicle.
American Architect, international edition.	Harper's Bazar.
American Bookmaker.	Harper's Magazine.
American Chemical Journal.	Harper's Weekly.
American Historical Review.	Inland Architect, photo edition.
American Journal of Science.	Inland Printer.
American Journal of Sociology.	International Journal of Ethics.
American Kitchen Magazine.	Journal of Applied Microscopy.
American Mathematical Monthly.	Journal of Botany.
American Naturalist.	Journal of Comparative Medicine.
American Veterinary Review.	Journal of Political Economy.
Analyst, London.	Journal of the American Chemical Society.
Annals of Botany.	Journal of Chemical Society, London.
Annals of Mathematics.	Journal of the Military Service Institute.
Atlantic Monthly.	Journal of the Royal Agricultural Society.
Auk.	Journal of the Society of Chemical Industry.
Book Buyer.	Kansas City Star, daily (two copies).
Bookman.	Library Journal and Literary News.
Botanical Gazette.	Literary World, Boston.
Botanischen Gesellschaft.	Literature.
Bulletin, Torrey Botanical Club.	Modern Medicine and Bacteriological Review.
Butterick's Delineator.	Nation.
Cable.	Nature.
Canadian Entomologist.	New England Magazine.
Carpentry and Building.	North American Review.
Cassier's Magazine.	Nineteenth Century, New York.
Chautauquan.	Philosophical Magazine.
Charities Review.	Plant World.
Chemical News, London.	Political Science Quarterly.
Critic.	Popular Science Monthly.
Eclectic Magazine.	Psyche.
Education.	Public Libraries.
Electrical Directory.	Publishers' Weekly.
Electrical Engineer.	Quarterly Journal of Economics.
Electrical Review.	Review of Reviews.
Engineering Record.	Sanitarian.
Entomological News.	Science.
Erythea.	Scientific American and Supplement.
Etude.	Spectator, London.
Fortnightly Review.	Table Talk.
Forum.	Veterinary Magazine.
Garden, London.	Werner's Magazine.
Gardening, Chicago.	Zoologist.





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